Draft Environmental Impact Assessment Report

The Prospecting Right and Bulk Sampling for Diamonds on Portion of Plot 516, Plot 678 and Plot 668 Port Nolloth, Richtersveld Local Municipality, Namakwa District Municipality, Northern Cape

DMR REF. NO.: NC 30/5/1/1/2/12672 PR

23 September 2021

Draft Report

DOCUMENT NAME:

The Prospecting Right and Bulk Sampling for Diamonds on Portion Of Plot 516, Plot 678 And Plot 668 Port Nolloth, Richtersveld Local Municipality, Namakwa District Municipality, Northern Cape

PROJECT NUMBER:	**DATE:**	**REPORT STATUS:**
N/A	September 2021	Draft Report

CARRIED OUT BY:

GroenbergEnviro (Pty) Ltd

AUTHOR(S):

Helene Botha

PREPARED BY:

GroenbergEnviro (Pty) Ltd

Revision Status

Rev No.	Issue Date	Author	Technical Review	Report Review
0	September 2021	H. Botha	P. Badenhorst	J.A. Barnard

Contact Information

Please contact the undermentioned should you require further information.

GroenbergEnviro PTY Ltd	
Address: Wellington Office	Wellington Klein Opperhorst PO Box 1058 Wellington 7654 Fax: +27 86 476 7139
Website	www.groenbergenviro.co.za
Contact Person 	Helene Botha I have 6 years' experience in project management and report writing. I have a BSc degree and also gained my Master's Degree in Environmental Management from the North-West University in Potchefstroom. My focus in GroenbergEnviro is primarily on Environmental Impact Assessments and Water Use License Applications.
Contact number	+27 79 509 0785
Cell number	+27 79 509 0785
Fax Number	+27 86 476 7139
Email	helene@groenbergenviro.co.za

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

AND

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR LISTED ACTIVITIES ASSOCIATED WITH PROSPECTING RIGHT AND/OR BULK SAMPLING ACTIVITIES INCLUDING TRENCHING IN CASES OF ALLUVIAL DIAMOND PROSPECTING.

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT: **Dansile Nxikwe Diamonds CC**

TEL NO: **018 787 2347**

FAX NO: **018 787 2347**

POSTAL ADDRESS: **144 Kwadas Street, Buffelsrivier; 8251**

PHYSICAL ADDRESS: **As above**

DMR REFERENCE NUMBER: **NC 30/5/1/1/2/12672 PR**

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3) (b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process—

(a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
(d) determine the—-
    (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
    (ii) degree to which these impacts—
        (aa) can be reversed;
        (bb) may cause irreplaceable loss of resources, and
        (cc) can be avoided, managed or mitigated;
(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
(f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
(g) identify suitable measures to manage, avoid or mitigate identified impacts; and
(h) identify residual risks that need to be managed and monitored.

Statement of Independence

GroenbergEnviro (Pty) Ltd (GBE) has no interest in the outcome of this report, nor does this company have any interest that could be reasonably regarded as being capable of affecting its independence.

Disclaimer

The opinions expressed in this report have been based on the information supplied to GBE by the Applicant. GBE has exercised all due care in reviewing the supplied information, with conclusions from the review being reliant on the accuracy and completeness of the supplied data.

GBE does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them.

Professional environmental opinions presented in this report apply to the site conditions and features as they existed at the time of GBE's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which GBE had no prior knowledge nor had the opportunity to evaluate.

EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

NAME	Helene Botha	Pieter Badenhorst
RESPONSIBILITY ON PROJECT	Preparation of Environmental Impact Assessment Report, Public Participation Documentation, Closure, Decommissioning and Rehabilitation Plan	
QUALIFICATIONS	B. Sc. (Zoology & Genetics) B. SC. Hons. (Animal Behaviour) M. Env. Man (Masters' Degree in Environmental Management)	B. SC. B. Eng. (Civil) M. Eng. (Irrigation) B. Hons. (B&A) MBA
PROFESSIONAL REGISTRATION	Registration with Environmental Assessment Practitioners Association of South Africa (EAPASA): Reg. No.: 2019/558.- in progress	Professional Engineer, member of the Engineering Council of South Africa Member of the South African Institute of Civil Engineers Member of the International Association of Impact Assessment (South Africa) Registration with Environmental Assessment Practitioners Association of South Africa (EAPASA): Reg. No.: 2019/1108– in progress
EXPERIENCE (YEARS)	6 years	47 years
EXPERIENCE & EXPERTISE	The consultant has more than 6 years' experience in project management and reports writing. Miss Botha has worked on numerous Environmental Impact Assessments, Basic Assessments, S24G Rectifications, and Water Use Licenses and has considerable experience in the preparation and compilation of Environmental Impact Reports, Environmental Management Programmes, and project management. Refer to CV Summary attached at **Appendix A, page 130**.	The consultant has more than 47 years' experience in project management and reports writing. He worked at the CSIR in environmental and estuarine management for 16 years. During that time, he was part of the team that developed coastal management guidelines; the first process for EIA's and undertook numerous environmental studies for DEAT in collaboration with a team of ecologists. The past couple of years he has worked mainly in environmental control and environmental impact assessments and has completed EIAs for many projects. He has also attended an EIA peer review on a major development for DEAT and is a member of IAIAsa. The practitioner has attended or organised many meetings/workshops/open days to identify issues for similar projects at the CSIR; Blue Flag for DEAT as well as other DEAT projects. The Blue Flag and other projects required interaction with large groups of stakeholders. Refer to CV Summary attached at **Appendix A, page 130**

DECLARATION OF INDEPENDENCE

I, Pieter Badenhorst, declare that –

- I act as the independent environmental assessment practitioner in this role as EAP;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the role of EAP in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the reports comprising the Environmental Impact Assessment;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the Competent Authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and,
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

Signature of the Environmental Assessment Practitioner

Name of Company: GroenbergEnviro (Pty) Ltd

Date: 23 September 2021

DEFINITIONS

Alternatives - In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to –
i. The property on which or location where it is proposed to undertake the activity;
ii. The type of activity to be undertaken;
iii. The design or layout of the activity;
iv. The technology to be used in the activity, and;
v. The operational aspects of the activity.

Aquifer - A formation, group of formations, or part of a formation that contains sufficient saturated permeable material to store and transmit water; and to yield economical quantities of water to boreholes or springs. An aquifer is the storage medium from which groundwater is abstracted.

Baseline - Information gathered at the beginning of a study which describes the environment prior to development of a project and against which predicted changes (impacts) are measured.

Biodiversity - The diversity, or variety, of plants, animals and other living things in a particular area or region. It encompasses habitat diversity, species diversity and genetic diversity.

Borehole - Includes a well, excavation, or any other artificially constructed or improved groundwater cavity which can be used for the purpose of intercepting, collecting or storing water from an aquifer; observing or collecting data and information on water in an aquifer; or recharging an aquifer.

Community - Those people who may be impacted upon by the construction and operation of the project. This includes neighbouring landowners, local communities and other occasional users of the area.

Construction Phase - The stage of project development comprising site preparation as well as all construction activities associated with the development.

Consultation - A process for the exchange of views, concerns and proposals about a project through meaningful discussions and the open sharing of information.

Critical Biodiversity Area - Areas of the landscape that must be conserved in a natural or near-natural state in order for the continued existence and functioning of species and ecosystems and the delivery of ecosystem services.

Cumulative Impacts - Direct and indirect impacts that act together with current or future potential impacts of other activities or proposed activities in the area/region that affect the same resources and/or receptors.

Environment - The surroundings within which humans exist and that are made up of
i. The land, water and atmosphere of the earth;
ii. Micro-organisms, plant and animal life;
iii. Any Part or combination of (i) and (ii) and the interrelationships among and between them; and
iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Authorisation (EA) – The authorisation by a competent authority of a listed activity.

Environmental Assessment Practitioner (EAP) – The person responsible for planning, management and co-ordination of environmental impact assessment, strategic environmental assessments, environmental management plans or any other appropriate environmental instrument introduced through regulations.

Environmental Impact Assessment (EIA) – In relation to an application to which scoping must be applied, means the process of collecting, organizing, analysing, interpreting and communicating information that is relevant to the consideration of that application. This process necessitates the compilation of an Environmental Impact Report, which describes the process of examining the environmental effects of a proposed development, the anticipated impacts and proposed mitigatory measures.

Environmental Impact Report (EIR) - A report assessing the potential significant impacts as identified during the Scoping phase.

Environmental Management Programme (EMPr) - A management programme designed specifically to introduce the mitigation measures proposed in the Reports and contained in the Conditions of Approval in the Environmental Authorisation.

Gross Domestic Product (GDP) by region - represents the value of all goods and services produced within a region, over a period of one year, plus taxes minus subsidies.

Groundwater - Water found in the subsurface in the saturated zone below the water table. Groundwater is a source of water and is an integral part of the hydrological system.

Hydrocarbons – Oils used in machinery as lubricants, including diesel and petrol used as fuel.

Hydrogeology - In South Africa, the term geohydrology and hydrogeology are used interchangeably. In theory hydrogeology is the study of geology from the perspective of its role and influence in hydrology, while geohydrology is the study of hydrology from the perspective of the influence on geology.

Impact - A change to the existing environment, either adverse or beneficial, that is directly or indirectly due to the development of the project and its associated activities.

Interested and Affected Party (I&AP) – Any individual, group, organization or associations which are interested in or affected by an activity as well as any organ of state that may have jurisdiction over any aspect of the activity.

Municipality –

(a) Means a metropolitan, district or local municipality established in terms of the Local Government: Municipal Structures Act, 1998 (Act No. 117 of 1998); or
(b) In relation to the implementation of a provision of this Act in an area which falls within both a local municipality and a district municipality, means
    (i) The district municipality, or
    (ii) The local municipality, if the district municipality, by agreement with the local municipality, has assigned the implementation of that provision in that area to the local municipality.

NEMA EIA Regulations - The EIA Regulations means the regulations made under section 24(5) of the National Environmental Management Act (Act 107 of 1998) (Government Notice No. R 982, R 983, R984 and R 985 in the Government Gazette of 4 December 2014 refer as amended by GNR 324, 325, 326 and 327 of 7 April 2017.

No-Go Alternative – The option of not proceeding with the activity, implying a continuation of the current situation / status quo

Public Participation Process (PPP) - A process in which potential Interested and Affected Parties are given an opportunity to comment on, or raise issues relevant to, specific matters.

Registered Interested and Affected Party – All persons who, as a consequence of the Public Participation Process conducted in respect of an application, have submitted written comments or attended meeting with the applicant or environmental assessment practitioner (EAP); all persons who have requested the applicant or the EAP in writing, for their names to be placed on the register and all organs of state which have jurisdiction in respect of the activity to which the application relates.

Scoping process - A procedure for determining the extent of and approach to an EIA, used to focus the EIA to ensure that only the significant issues and reasonable alternatives are examined in detail

Scoping Report – The report describing the issues identified during the scoping process.

Significant impact – Means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

Spatial Development Framework (SDF) - A document required by legislation and essential in providing conservation and development guidelines for an urban area, which is situated in an environmentally sensitive area and for which major expansion is expected in the foreseeable future.

Specialist study - A study into a particular aspect of the environment, undertaken by an expert in that discipline.

Stakeholders - All parties affected by and/or able to influence a project, often those in a position of authority and/or representing others.

Sustainable development - Sustainable development is generally defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. NEMA defines sustainable development as the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

Visibility - The area from which the project components would actually be visible and depends upon topography, vegetation cover, built structures and distance.

Visual Character - The elements that make up the landscape including geology, vegetation and land-use of the area.

Visual Quality - The experience of the environment with its particular natural and cultural attributes.

Visual Receptors - Individuals, groups or communities who are subject to the visual influence of a particular project.

ACRONYMS AND ABBREVIATIONS

amsl	Above mean sea level
BPEO	Best Practicable Environmental Option
CBA	Critical Biodiversity Area
DM	District Municipality
DMR	Department of Mineral Resources
DWA	Department of Water Affairs
DSR	Draft Scoping Report
DEIR	Draft Environmental Impact Assessment Report
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESA	Ecological Support Area
EStA	Early Stone Age
FoT	"Free on Truck ": means there is no processing and that it's a raw product.
FEIR	Final Environmental Impact Report
FSR	Final Scoping Report
GA	General Authorisation
GBE	GroenbergEnviro (Pty) Ltd
GDP	Gross Domestic Product
GDPR	Regional Gross Domestic Product
GGP	Gross Geographic Product
GNR	Government Notice Reference
Ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
km	Kilometres
km^2	Square kilometres
LED	Local Economic Development
LM	Local Municipality
LoM	Life of Mine
LN	Listing Notice
L/s	Litres per second
LSA	Late Stone Age
m^3	Metres cubed
MAP	Mean Annual Precipitation
MAPE	Mean Annual Potential Evaporation
MASMS	Mean Annual Soil Moisture Stress (% of days when evaporation demand was more than double the soil moisture supply)
MFD	Mean Frost Days
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
MSA	Middle Stone Age
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act 107 of 1998 as amended
NEM: BA	National Environmental Management: Biodiversity Act 10 of 2004
NEM: WA	National Environmental Management: Waste Act 59 of 1998
NFEPA	National Freshwater Ecosystem Priority Area
NHRA	National Heritage Resources Act 25 of 1999
NWA	National Water Act 36 of 1998
PES	Present Ecological State
RDL	Red Data List
ROM	Run of Mine
S&EIR	Scoping and Environmental Impact Reporting
SAHRA	South African National Heritage Resources Agency
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
StatsSA	Statistics South Africa
WMA	Water Management Area
WML	Waste Management License
WUL	Water Use License

CONTENTS

Figures

Tables

1 CONTACT PERSON & CORRESPONDENCE ADDRESS

1.1 Details of the EAP

Name of the Practitioner: Helene Botha (GroenbergEnviro (Pty) Ltd)
Tel No.: 076 509 0785
Fax No. : 086 476 7139
e -mail address: helene@groenbergenviro.co.za

1.2 Expertise of the EAP

The qualifications of the Environmental Assessment Practitioner (EAP)

NAME	Helene Botha	Pieter Badenhorst
QUALIFICATIONS	B. Sc. (Zoology & Genetics) B. SC. Hons. (Animal Behaviour) M. Env. Man (Masters' Degree in Environmental Management)	B. SC. B. Eng. (Civil) M. Eng. (Irrigation) B. Hons. (B&A) MBA
PROFESSIONAL REGISTRATION	Registration with Environmental Assessment Practioners' Association of South Africa (EAPASA): Reg. No.: 2019/558.- in progress	Professional Engineer, member of the Engineering Council of South Africa Member of the South African Institute of Civil Engineers Member of the International Association of Impact Assessment (South Africa) Registration with Environmental Assessment Practioners' Association of South Africa (EAPASA): Reg. No.: 2019/1108– in progress

Refer to **Appendix A, page 130** for the CV of EAP.

2 LOCATION OF THE ACTIVITY

Table 1: Project Location Information

Farm Name:	Port Nolloth Township A portion of Remainder Plot 516 Plot 678 Plot 668
Application area (Ha)	2212Ha
Magisterial district:	Namakwaland
Distance and direction from the nearest town	Adjacent to Port Nolloth
21-digit Surveyor General Code for each farm portion	Plot 516 C05300100000051600000 Plot 678 C05300100000067800000 Plot 668 C05300100000066800000

2.1 Location

The prospecting right application area is located on the outskirts of Port Nolloth, a coastal town located approximately 160km in a north-westerly direction from Springbok in the Northern Cape Province.

2.2 Locality Map

Refer to the locality plan attached in **Figure 1**. **Figure 2** shows the properties and coordinates as detailed in **Table 1** above.

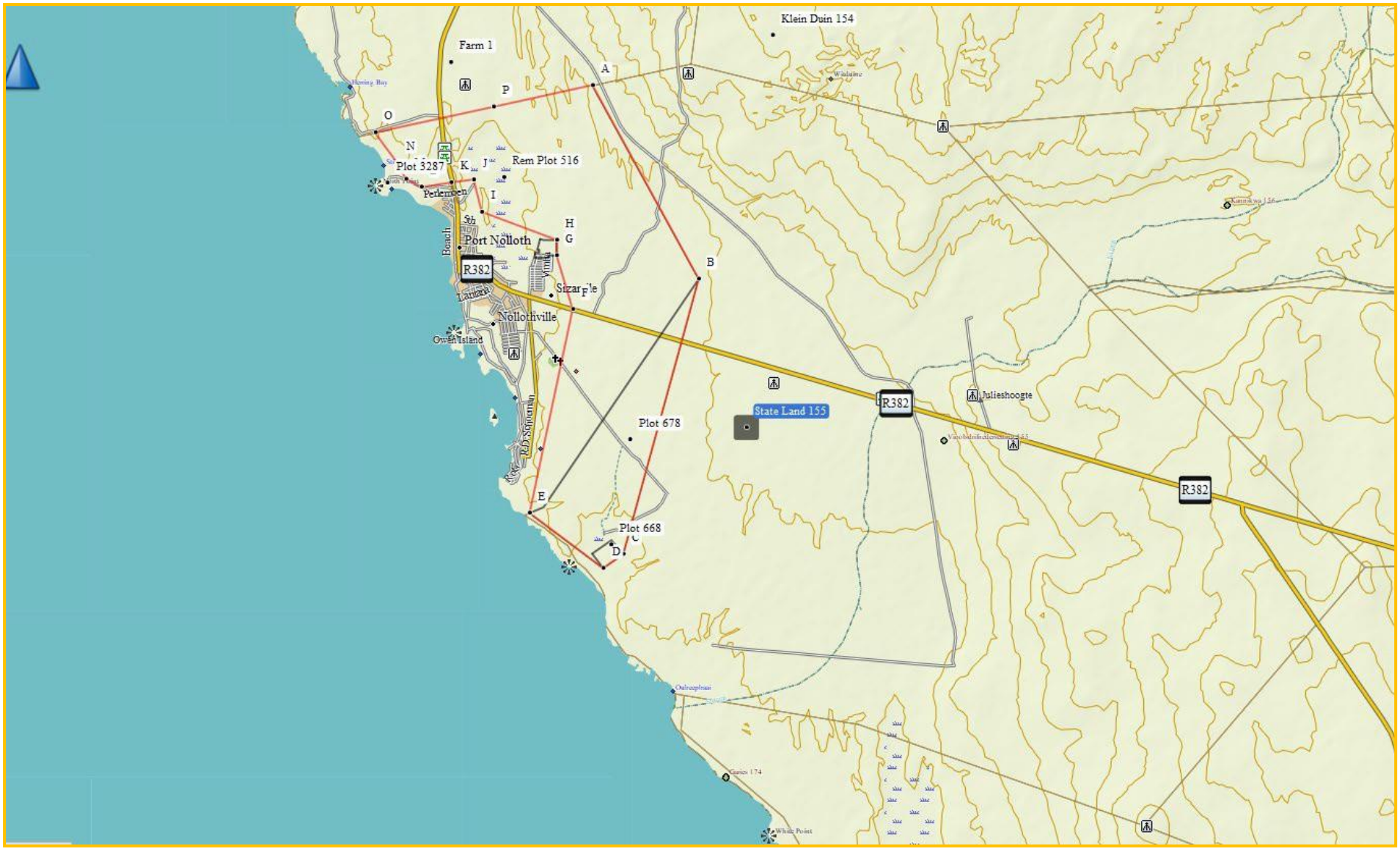


Figure 1: Locality Plan of Project Site Prospecting Licence Area

Properties	COORDINATES wgs 84		
The area A, B, C, D, E, F, G, H, I, J K, L, M, N, O, P and A situated over a portion of Plot 516, Plot 678 and Plot 668 Port Nolloth Extend: 2212Ha	A S29.22222° E16.89387°	B S29.25634° E16.91372°	C S29.30487° E16.89960°
	D S29.30735° E16.89584°	E S29.29762° E16.88205°	F S29.26171° E16.89015°
	G S29.25221° E16.88712°	H S29.24950° E16.88715°	I S29.24454° E16.87312°
	J S29.23886° E16.87160°	K S29.23933° E16.86738°	L S29.24014° E16.86181°
	M S29.23875° E16.85892°	N S29.23581° E16.85729°	O S29.23051° E16.85317°
	P S29.22599° E16.87532°		

Figure 2: Locality Plan showing Prospecting Area with Farm Boundaries and Co-ordinates

3 DESCRIPTION OF THE PROPOSED ACTIVITIES

3.1 Introduction and Background

Dansile Nxikwe Diamonds CC is the holder of Prospecting right with a section 20 permission NC30/5/1/1/2/11976PR on the adjacent portion of Plot 516 Port Nolloth to prospect for and remove and dispose of diamond (alluvial).

As part of the exploration report, it was stated that redefinition of the Prospecting Right Area must be addressed as soon as possible, so that pre-bulk sampling work (geophysics and pitting) can be done on the selected target areas as depicted in **Figure 7, page 15** of this document.

This application is an extension of the existing right to determine the continuation and extension of the Kamma River paleo-channel beyond the boundaries of the current prospecting area and to investigate other target areas in the area related to other paleo-channels or paleo beaches as depicted in **Figure 3**. The ultimate aim would be to apply for a mining right for the combined area once a resource statement has been completed.

The evaluation of a diamond deposit is the process followed to establish economic viability and to identify the "footprint" of the deposit. The "footprint" is a profile of the type of diamonds present, which may be important for market planning. Economic sensitivity analyses indicate that all diamond deposits are most sensitive to diamond value and grade, and these are the dominant factors that influence the decision to proceed with a project. The objective of the preliminary evaluation phase is to establish the global macro diamond grade and an initial estimate of value per carat to arrive at an Inferred Resource. If the results of this work are favourable, the project may move on to the evaluation phase (bulk sampling), where local grades and macro diamond values are established to arrive at a Measured Resource. If conceptual economic modelling of the measured resource indicates that the deposit may be viable, then the project will move to the feasibility and mining phase (Prospecting Works Programme; 2020).

A risk decision is made each time a project moves or does not move from one phase to the next. A risk decision may be made to skip phases of the process, for example, the project may proceed to feasibility and mining directly from the preliminary evaluation stage. The way risk decisions are managed is to enter the available geological data into economic models with variables such as operating costs, capital costs, recovery factors, dilution, stripping ratios, etc. In this way, projects that are most likely and least likely to be viable can be prioritised, held or abandoned. The effect of changes in parameters such as diamond values, new technology, royalties, etc., can then be recognised in terms of their effect on the potential return on investment for the project.

3.2 The Scope of the Proposed Activities

The information in Table 2 below is referenced from the Prospecting Works Programme (PWP) (2020).

Table 2: Details of the Mineral Resource (PWP; 2020)

ITEM	DETAIL
Type of mineral	Da Diamonds Alluvial
Locality (direction and distance from the nearest town)	The prospecting area lies adjacent to the town of Port Nolloth as shown in **Figure 1 and Figure 2**.
Extent of application	2212 Ha Refer to Figure 2.
Depth of mineral below the surface	To be determined through prospecting
Geological formation	Namaqua Metamorphic Belt Described further in Section 8.1.2 in this Report.

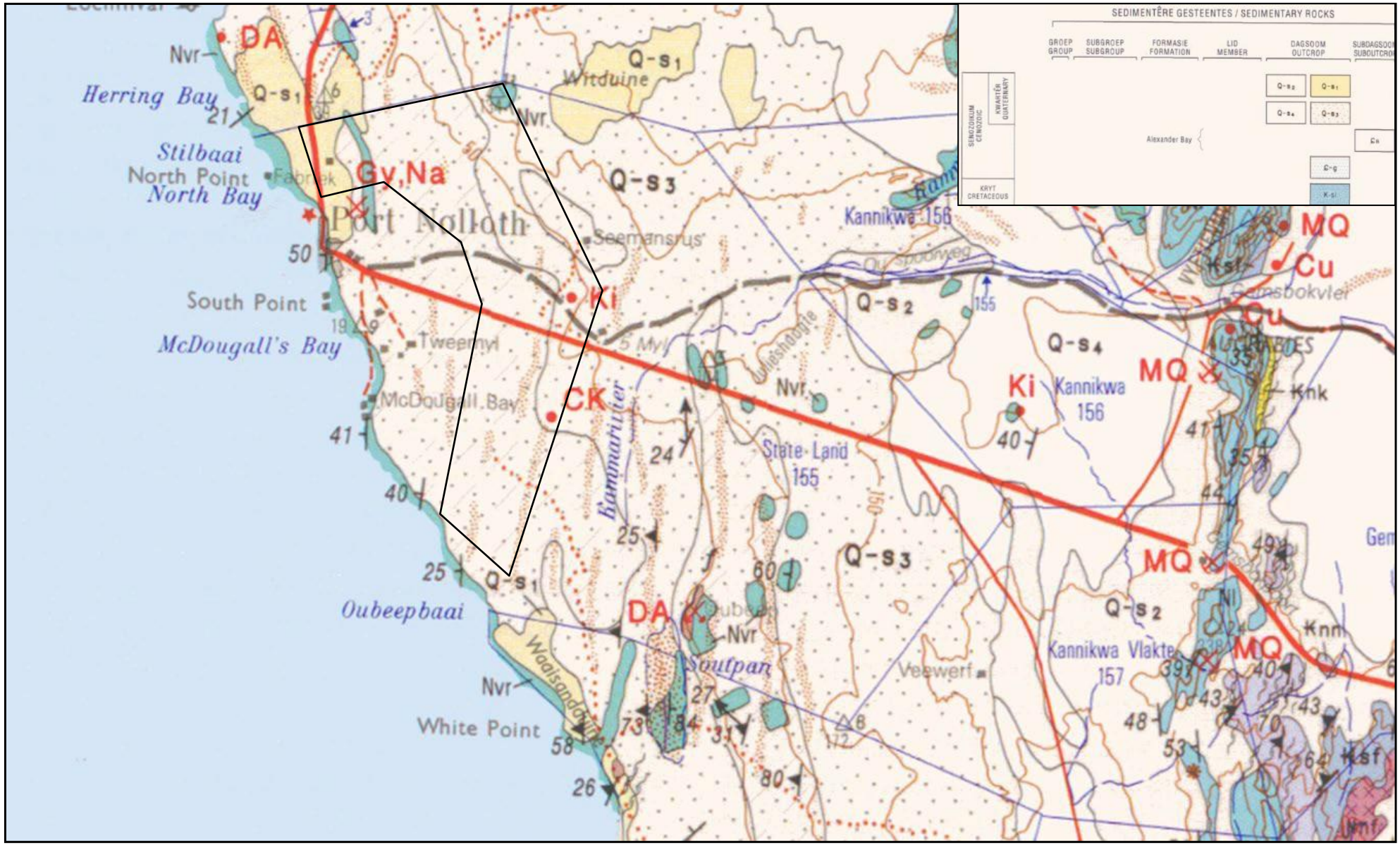


Figure 3: Geological Map providing justification for the possibility that the minerals being applied for could occur on the land.

3.3 Project Description

3.3.1 Construction Phase: Development of infrastructure and logistics

- Access and service roads: Access to the exploration works will be via existing farm tracks as shown in **Figure 1 and Figure 2**. Existing farm tracks will be used or as haul roads and will be upgraded where needed.
- Water supply: Sea water will be used as process water and stored in mobile tanks at the processing area.
- Electricity supply: Electrical supply will be provided by gensets.
- Logistics: No permanent infrastructure is present or will be required due to the small scale of operations and the close proximity of the Port Nolloth settlement.
- All logistics and infrastructure required for processing will be mobile units and plants.
- No workshops will be constructed, only a service and wash bay will be required for emergency maintenance. All major repairs will be done in workshops in Port Nolloth.
- Limited waste management facilities will be provided at the processing area and will consist of the following:
  - Plastic containers for domestic waste, which will be transported daily to the municipal solid waste disposal facility;
  - Temporary storage area for used lubrication products and other hazardous chemicals for the collection of the small volume of waste before it is removed to a registered disposal site; and,
  - Hydrocarbon management systems will consist of drip trays for stationary equipment and mobile fuel trailer in the bunded parking area.

Mine logistics

The logistics area will comprise a temporary service and wash bay, storage facilities, waste management facilities, ablution facilities and the processing plant, totalling a footprint of approximately 0.5 Ha in size.

Processing Plant Design

- The processing plant is a basic rotary pan plant where the sea water will wash the excavated material. The sea water will be returned from the dewatering screen for recycling. Refer to the process flow in **Figure 6, page 12**.
- The tailings containing seawater and alluvial deposit that has been processed will be deposited into the historically excavated area where the mobile processing plant is to be located.
- The pump will be placed on a rocky shore outside the inter-tidal zone and not on the beach. The intake pump will be a portable petrol-driven mono pump, to be positioned above the High Water Mark (HWM) of the sea, to extract sea water from the inter-tidal pools. No permanent or temporary infrastructure will be required at the intake. The portable pump will be removed at the end of every working day to reduce environmental risk and for security reasons.
- The seawater will be transported via a 50mm pipeline in a direct line to the edge of the processing plant located approximately 250m from the edge of the beach or approximately 230m from the HWM.
- The seawater will be stored in 3 x 10 000 ℓ plastic tanks within the processing plant area.
- The plant will be run for 12 hours a day over weekdays only.

Road Access and Haul Routes

Existing public roads will be used as access and haul roads. Sections of new haul and access roads could be required, as could the upgrading of existing roads, which includes the potential for a realignment of roads required during Phase 3 Bulk Sampling.

Security and access control

The processing plant and logistics area will be fenced and access control provided to ensure security.

Power supply

Power will be supplied by a genset (generator) located at the processing plant. A 100-litre fuel bowser will be used for the supply of fuels and stored in a bunded area with a volume of less than 80m².

Water Supply

- **Process water** supply is to be sourced from the sea located approximately 250m from the processing plant. Sea water will be extracted from inter-tidal pools with a portable petrol-driven mono pump via a 50mm surface pipeline and the water will be stored in 3 x 10 000ℓ plastic tanks. No permanent or temporary infrastructure will be required at the intake. The sea water will be returned from the dewatering screen for recycling.
- **Potable water** will be trucked in and stored in water tanks for domestic consumption.

3.3.2 Operational Phase

PHASE 1: Literature Study Imagery Analysis Geological Mapping Geophysical Survey

During this phase, the desktop studies and studying of available information on surrounding exploration work that has been undertaken will be supplemented by field observations. Ground Resistivity measurements will also be used to "home in" on target areas.

PHASE 2: Preliminary evaluation - Prospecting Pits

The objective of the preliminary evaluation phase is to determine a ballpark estimate of grade and size and thus possible in-situ value of the deposit. This is normally established by collecting mini samples by the most cost-effective method available. Due to the relative shallow overburden prospecting pits is the most common technique and will be employed during this exploration program to allow for geological samples.

The results of the existing exploration program have indicated that the paleo-channel running through the saltpan southwards and then westwards comprises a very promising target measuring about 3.5km long by 500 meters wide. The raised marine beaches on the rest of the property also comprise attractive targets.

Pit development will be the same as for trench development (Bulk Sampling) as shown in **Figure 4 and Figure 5**, but on a much smaller scale. There will only ever be three prospecting pits open at any given time, one in the process of rehabilitation, one that is operational and one in the process of development and it is anticipated that no more than 30 such pits will be developed. After results are logged the pit will be backfilled immediately for security and safety reasons before the project is moved to the next pit position. In case of a sudden closure of the project, there will only be one open pit to be dealt with as part of final decommissioning and rehabilitation.

The following volumes requiring earthmoving is an estimation used in the costing exercise, based on the dimensions provided in **Figure 4:**

- Pit floor to inspect and logged the gravel: 5.0m long and 2.0m wide ($10m^2$)
- Depth of Topsoil: 0.5m to be stockpiled separate from overburden.
- Depth of Overburden: 5m to be stockpiled separate from topsoil.
- Depth of Gravel: 1m where sampling takes place.
- Total Depth of Prospecting Pit: 6.5m
- Footprint including 3m bench: 11m long x 8m wide ($88m^2$)
- Volume topsoil: $88m^2$ X 0.5m = $44m^3$
- Volume overburden: $50m^2$ (average $88m^2$ top & $10m^2$ bottom) X 5m = $250m^3$
- Volume gravel: $10m^2$ X 1m = $10m^3$

Total footprint from 30 Prospecting pits: $88m^2$ X 30 = $2640m^2$
Total earthmoving from 30 Prospecting pits: ($44m^3$+$250m^3$) X 30 = $8820m^3$
Total gravel from 30 Prospecting pits: $10m^3$ X 30 = $300m^3$
Note that gravel from the pits is not taken out and treated but left intact and closed after logging of results.

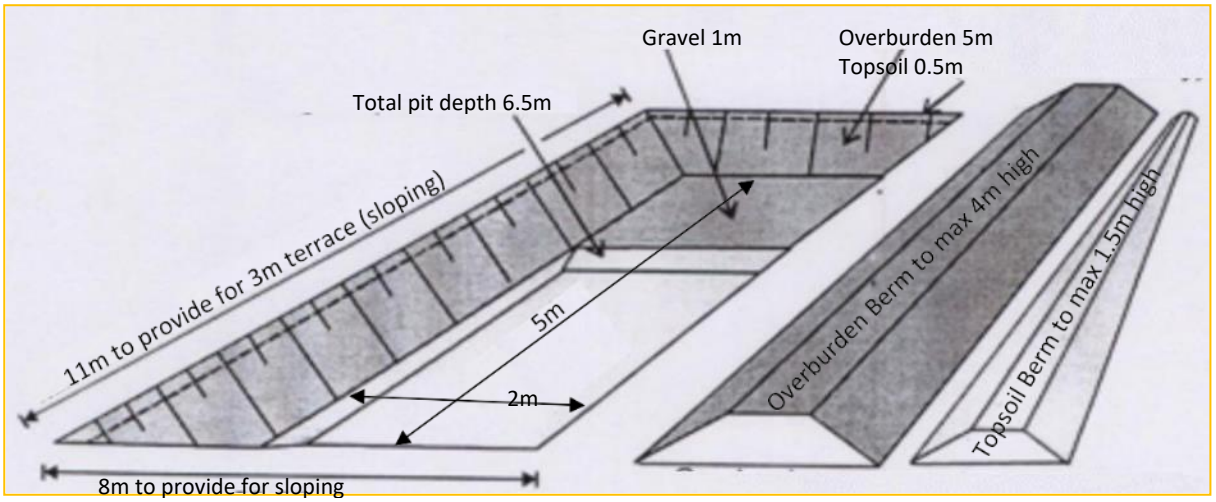


Figure 4: Schematic Pit Development

PHASE 3: Bulk sampling (Trenches)

The bulk sample will consist of a trench excavated perpendicularly to the paleo channel or paleo beach. There will only ever be one bulk sample open at any given time and it is anticipated that between 5 and 10 such sample sites will be developed. The bulk sampling or trial mining/prospecting however needs to continue till approximately 1 000 carats has been recovered in order for the feasibility of the mine to be concluded and the determination to continue with a Mining Right application. The information from this trial mining is also essential to determine the most efficient final recovery method.

The following are pertinent considerations regarding the prospecting trench development:

The trench width will be determined by:

- Overburden depth; the deeper the overburden, the wider the trench will be at the surface.
- The angle of repose and safety of the sidewalk in terms of slumping. The operator on site must determine these, as there are in situ safety considerations.
- Topsoil (barely discernible) from underlying dune sands.

Prospecting trenching development will consist of the following procedures. Refer to **Figure 5:**

- Remove topsoil to either side of the eventual trench lateral extension. Note that the sand that makes up the topsoil forms part of a mobile sand dune system and thus the "topsoil" is very recent and has not had a chance to develop the structure of topsoil. The upper 50cm will be treated as topsoil as it contains a seed bank at present.
- Remove the overburden to an average of 5m below the "topsoil" cover to a separate stockpile berm placed between the trench and topsoil berm.
- Extract alluvial material approximately 1m thick layer.
- Use an infield screen to remove fines and oversize +2mm and -25mm. Approximately 90% is scalping for immediate backfill.
- The remaining 10% (ROM – Run of Mine) will be trucked to the processing plant and stockpiled.
- The excavation will then be backfilled with the overburden before the topsoil cover is returned and the area allowed to revegetate naturally.

Processing plant

- Refer to **Figure 6** for an illustration of the typical flow diagram of the mobile processing plant.
- The location of the processing plant is shown in **Figure 8, page 16** and is located to the north-west of Port Nolloth and to the west of the R382 road to Alexkor. The site selected for the processing plant is within an existing disturbed footprint that is a deep excavation from historical mining located approximately 500 m inland from the sea, with an average depth of 5 mbgl.
- Sea water will be pumped to the processing plant for use in processing.
- ROM materials are loaded in feeder bins by FEL and transported by 2 conveyors feeding to 2X10 ft rotary wash pan-plant.

- In a Rotary Pan Plant (RPP)[1] the diamond-bearing gravel, sand and earth are mixed with water to create a slurry, often known as a 'puddle,' with a specific gravity in the range of 1.3 to 1.5 g/cm³. The puddle is then stirred in the pan by rotating angled 'teeth'. The heavier minerals will settle at the bottom of the pan where they are forced down to an area where the concentrate can be extracted. Many of the lighter minerals overflow the pan and can be removed to waste.

- Concentrate from the rotary pans (10% of ROM) is transported via conveyor to classifier/scrubber to clean last excess sand and mud from the concentrate.
- From the classifier/scrubber the concentrate goes into a two-stage FLOW SORT X-ray Media Separator and the final concentrate for recovery is deposited in safe boxes.
- Safe boxes from Flowsort are then opened and diamonds are sorted by hand.
- The tailings of the Flowsort is recovered and then put through a Boesman jig and sorted by hand.
- To concentrate the Run of Mine (ROM) for final recovery it will be reduced by approximately 99% and the tailings and slimes from the plant will be trucked during the return trips for backfilling in the excavation to reduce the cost of final rehabilitation and decommissioning.

Tailings Waste Management[2]

- The tailings will be comprised of the by-product of the alluvial ore that has been processed using seawater for cleaning that will be disposed of in the existing historical excavation where the processing will take place. The total volume of tailings from an estimated 5 trenches is calculated based on 1% final recovery, resulting in 2475m³ for disposal. The depth of the existing excavation is on average 5 metres deep, which means that even should the maximum number of 10 bulk trenches be sampled, the tailings will fill only 10% of the excavation (excavation volume is estimated at 50 000m³).
- Generic characteristics of the tailings based on desk-top research, and not on a representative sample analyzed by a specialist on waste classification or tailings storage facility design, are broadly commented on below:

  <u>Physical:</u>

  - Alluvium is typically made up of a variety of materials, including fine particles of silt and clay and larger particles of sand and gravel. Alluvium is loose, unconsolidated (not cemented together into a solid rock) soil or sediment that has been eroded, reshaped by water in some form, and redeposited in a non-marine setting. When this loose alluvial material is deposited or cemented into a lithological unit or lithified, it is called an alluvial deposit[3].
  - Details on the size distribution of the principle constituents; permeability of the material; void ratios of the material; consolidation or settling characteristics of the material under its own weight and that of any overburden; the strength of the material; specific gravity of the solid constituents; the water content of the material at the time of deposition, and other phases in the life of the deposit; and, the change in these properties with time, are unknown.

  <u>Chemical:</u>

  - The only chemical characteristic that can be commented on, is related to the water separated from the solids, which will be seawater extracted from the adjacent coastline. Seawater has a likely pH of 8.1[4] and high salinity, including a variety of dissolved solids and gases.

  <u>Mineral content:</u>

  - No information is available on the specific gravity of the residue particles or their impact on particle segregation and consolidation.
- Classification of tailings waste disposal is undertaken based on the characteristics of the tailings, location and dimensions of the deposit (height, surface area); importance and vulnerability of the environmental components that are at risk; the spatial extent, duration and intensity of potential impacts; and, the

[1] https://www.ehudlaniado.com/home/index.php/news/entry/diamond-recovery-methods

[2] Regulations regarding the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration or production operation in GNR 632 of 24 July 2015, as amended by GNR 990 of 21 September 2018.

[3] https://en.wikipedia.org/wiki/Alluvium#:~:text=Alluvium%20is%20typically%20made%20up,is%20called%20an%20alluvial%20deposit.

[4] https://www.epa.gov/ocean-acidification/understanding-science-ocean-and-coastal-acidification#:~:text=Today%2C%20average%20ocean%20pH%20is,ten%2Dfold%20increase%20in%20acidity.

pollution control measures are determined as a result of the risk analysis.

- The importance and vulnerability of the receiving environment within the Prospecting Right area are detailed in Section 8 of this report. The receiving environment within the historical excavation where the primary processing will take place, including the disposal of the waste by-product, is on average 5 metres deep and is being used as an illegal dump site. There is sparse vegetation growing in the disturbed area. Refer to Photograph Series 1.
- This risk analysis will be undertaken in the EIA phase when the spatial extent, duration and intensity of impacts are assessed.

The following **volumes requiring earthmoving** is an estimation used in the costing exercise (Refer **Figure 5**):

- Depth of Topsoil: 0.5m to be stockpiled separate from overburden.
- Depth of Overburden: 5m to be stockpiled separate from topsoil.
- Depth of Gravel: 1m
- ROM: Gravel scalped by 90% through infield screening 10% ROM (+2mm and -25mm) trucked to the processing plant
- Total Depth of Prospecting Trench: 6.5m
- Footprint of trench: 100m long x 50m wide (5000m² or 0.5Ha)
- Volume topsoil: 5000m² X 0.5m = 2500m³
- Volume overburden: 5000m² X 5m = 25 000m³
- Gravel: 5000m² X 1m = 5000m³ X 2SG = 10 000 tons
- ROM 5000m³ X 10% = 500m³ X 2SG = 1000 tons

Total surface disturbance: 5 Trenches: 0.5Ha X 5 = 2.5Ha
Total earthmoving: 5 Trenches: (2 500m³+25 000m³) x 5 =137 500m³
Total ROM from 5 Trenches: 500m³ X 5 = 2500m³ X 2SG = 5 000 tons
Total tailings to return for backfilling of 5 trenches: 2500m³-1% final recovery = 2475m³

The existing historical excavation is estimated at 50 000m³ at an average depth of 5 meters, which means that even if the maximum of 10 bulk samples is excavated only 10% of the excavation will be filled. Therefore at final closure, the floor of the excavation needs to be levelled and the sides sloped to create an even depression, or if prospecting advances to full-scale mining then the excavation will remain for processing during mining activities.

The applicant requires 5 000 tons ROM for processing to obtain a representative sample for sufficient statistical analysis to complete a resource statement and to determine a grade.

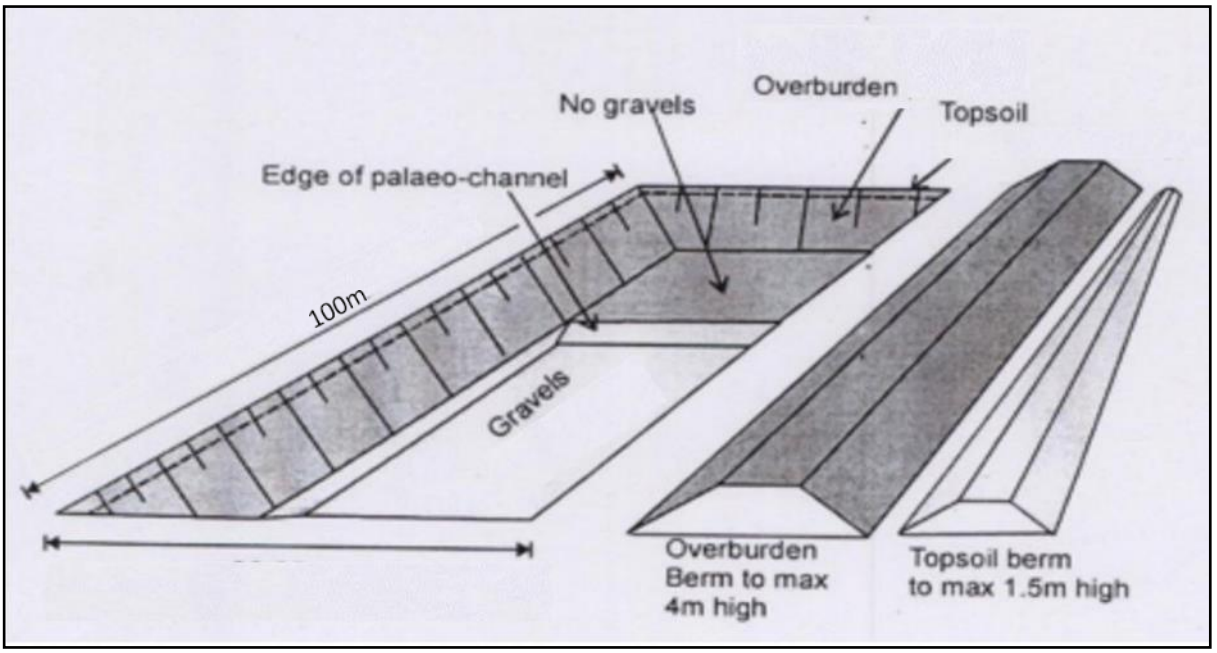


Figure 5: Schematic Trench Development

Table 3: Bulk Sampling Activities

ACTIVITY		DETAILS		
Number of pits/trenches planned		Estimated 5 to 10 bulk sample excavations until 1 000 carats has been recovered		
Dimensions of excavations	Number of excavations	Length	Breadth	Depth
	5 to 10	100m	50m	6.5m
Locality		The Middle channel Sample sites have been demarcated The rest will be developed perpendicularly to the paleo channel or paleo beach to be determined during Phase 2		
Volume Overburden (Waste) per bulk sample area		5 000m² X 5m = 25 000m³		
Volume Ore per bulk sample area		5 000m² X 1m = 5 000m³ Infield screening (remove 90% fines and oversize from gravel) 90% x 5 000m³ = 4 500 m³ for immediate backfill ROM = 500m³		
Density Overburden		25 000m³ X SG of 2 = 50 000 tons		
Density Ore		ROM = 500m³ X SG of 2 = 1 000 tons		
Phase(s) when bulk sampling will be required		Phase 3		
Timeframe(s)		Year 3 and 4		

PHASE 4 and 5: Resource Estimation

The project manager monitors the program, consolidates and processes the data and amends the program depending on the results. This is a continuous process throughout the program and continues even when no prospecting is undertaken on the ground.

Each physical phase of prospecting is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine how the work program is to proceed in terms of activity, quantity, resources, expenditure and duration.

3.3.3 Decommissioning and Closure Phase

- Waste can be removed as it is created.
- Excavations can be planned so that topography restoration is less complicated.
- At final closure, the floor of the excavation needs to be levelled and the sides sloped to create an even depression, or if prospecting advances to full-scale mining then the excavation will remain for processing during mining activities.
- The decommissioning and closure phase at the end of the life of the mine will consist of implementing the Final Rehabilitation, Decommissioning and Closure Plan as attached in APPENDIX F: FINAL REHABILITATION, DECOMMISSIONING AND CLOSURE PLAN, page 403.

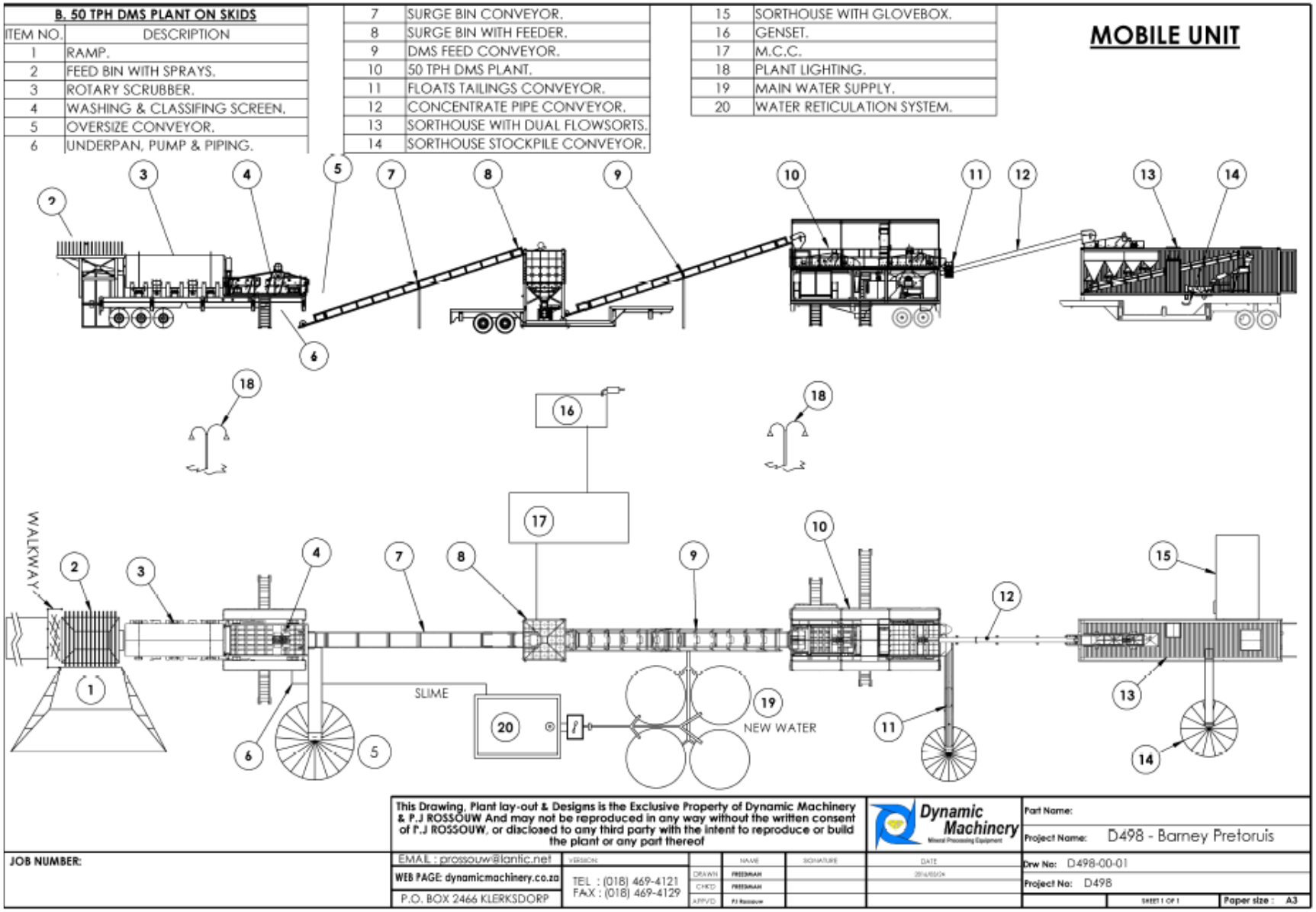


Figure 6: Example of a Typical Flow Diagram for the Mobile Processing Plant (Provided by the Applicant)

3.4 Prospecting Works Programme

As mentioned above, Dansile Nxikwe Diamonds CC is the holder of Prospecting right with a section 20 permission NC30/5/1/1/2/11976PR on a portion of Plot 516 Port Nolloth to prospect for and remove and dispose of diamonds (alluvial). Desktop studies during this exploration project also covered the surrounding area including the area covered by this application, which included sourcing of historical exploration data. The most important of these is the Alexkor exploration conducted over this area. As part of the exploration, the stretch between Alexander Bay and Port Nolloth was divided into twelve sub-areas, namely: Alexander Bay, Cape Voltas, Peacock Bay, Rietfontein, Giftkop, Holgat North, Holgat South, Perdevlei, Cliffs, Langpan, Muisvlak and Port Nolloth Reserve 155.

For this application, the information obtained during exploration of the Port Nolloth Reserve 155, provided very useful bedrock elevation contours. The bedrock elevation data also clearly shows the course of the Kamma River palaeo-channel (**Figure 3, page 5**). The results of the exploration completed by Alexkor describes the emerged (as opposed to submerged) marine gravel terraces from Alexander Bay to Port Nolloth Reserve 155 as the Lower Terrace (0-9 mamsl), the Middle Terrace (10-30 mamsl), the Upper Terrace (30-55 mamsl). This application area covers portions of the Lower and Middle Terrace.

It needs to be pointed out that all the trenching done in this area as part of the Alexkor exploration are primary trenches, which means that the trenches were placed across zones where marine gravels were delineated by drilling. No secondary trenches, which are used to delineate zones of enrichment found by primary trenching, have been undertaken in the area. As part of the recommendations in the exploration report on the existing project, it was recommended that the redefinition of the Prospecting Right Area must be addressed as soon as possible so that pre-bulk sampling work (geophysics and exploration pits) can be undertaken on the selected target areas as depicted in **Figure 7, page 15**. Ultimately the rest of the Prospecting Right Area must be examined to determine the potential for prospecting of the buried marine terraces.

To prevent possible amendments to this prospecting work program at a later stage, bulk sampling is also applied for although the bulk of the work will consist of pre-bulk sampling work, as shown in **Figure 7, page 15.** During this exploration program, any potential extension of the known diamond deposits will be identified and evaluated.

The proposed location of the pitting positions within the prospecting application area is therefore shown **in Figure 7, page 15**and the proposed positions of the bulk samples are therefore shown in **Figure 8, page 16** below.

Refer to **Table 4** below, which indicates the typical programme followed in prospecting.

Table 4: Prospecting Programme

Phase	Activity	Skill(s) required	Timeframe	Outcome	Timeframe for outcome	What technical expert will sign off on the out- come?
1	Non-invasive Literature Study Imagery Analysis Geological Map- ping Geophysical Survey	Geologist Project Manager	Month 1-12	Maps, plans & reports on previous work. Delineation of potential gravel re- source.	12 months	Geologist
2	Preliminary evaluation Prospecting Pits	Geologist Project Manager	Month 13-30	Diamond Ore Characterization (DOC) study for metallurgical purposes	18 months	Geologist
3	Evaluation phase Bulk sampling (Trenching)	Geologist Project Manager	Month 31-48	Diamond Ore Characterization (DOC) study for metallurgical purposes and to allow the sufficient recovery of diamonds for evaluation and foot printing purposes.	18 months	Geologist
4	Final analysis, quality control, database up- date and resource statement	Geologist Economist	Month 49-54	Feasibility study and decision making if results prove negative then de- commissioning and final closure if results prove positive then continue with mining	6 months	Project Manager
5	Application for a mining right or final decommissioning and closure	Project Manager	Month 55-60	Mining right or Closure certificate	6 months	Project Manager

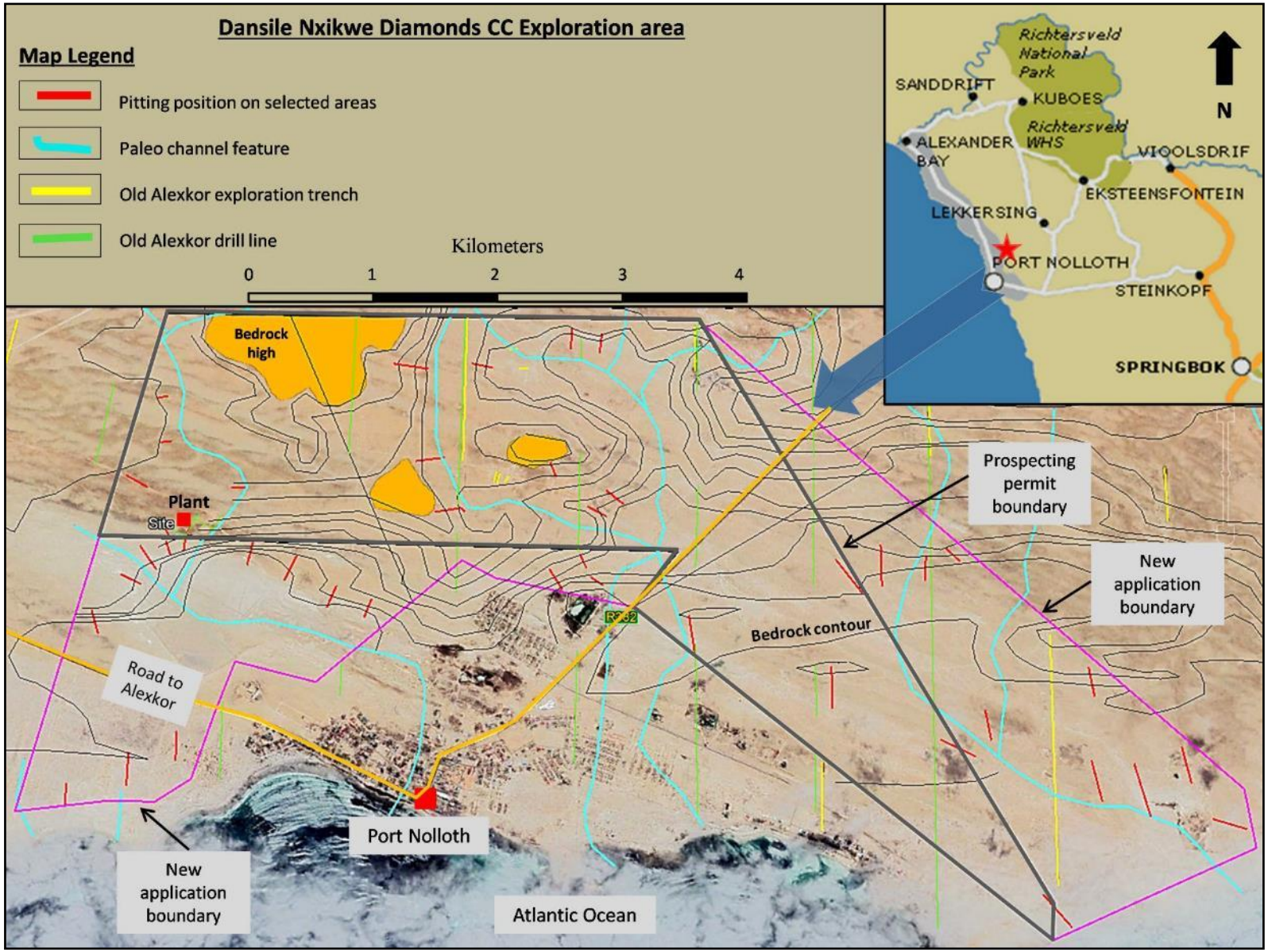


Figure 7: Proposed location of pitting positions within the application area

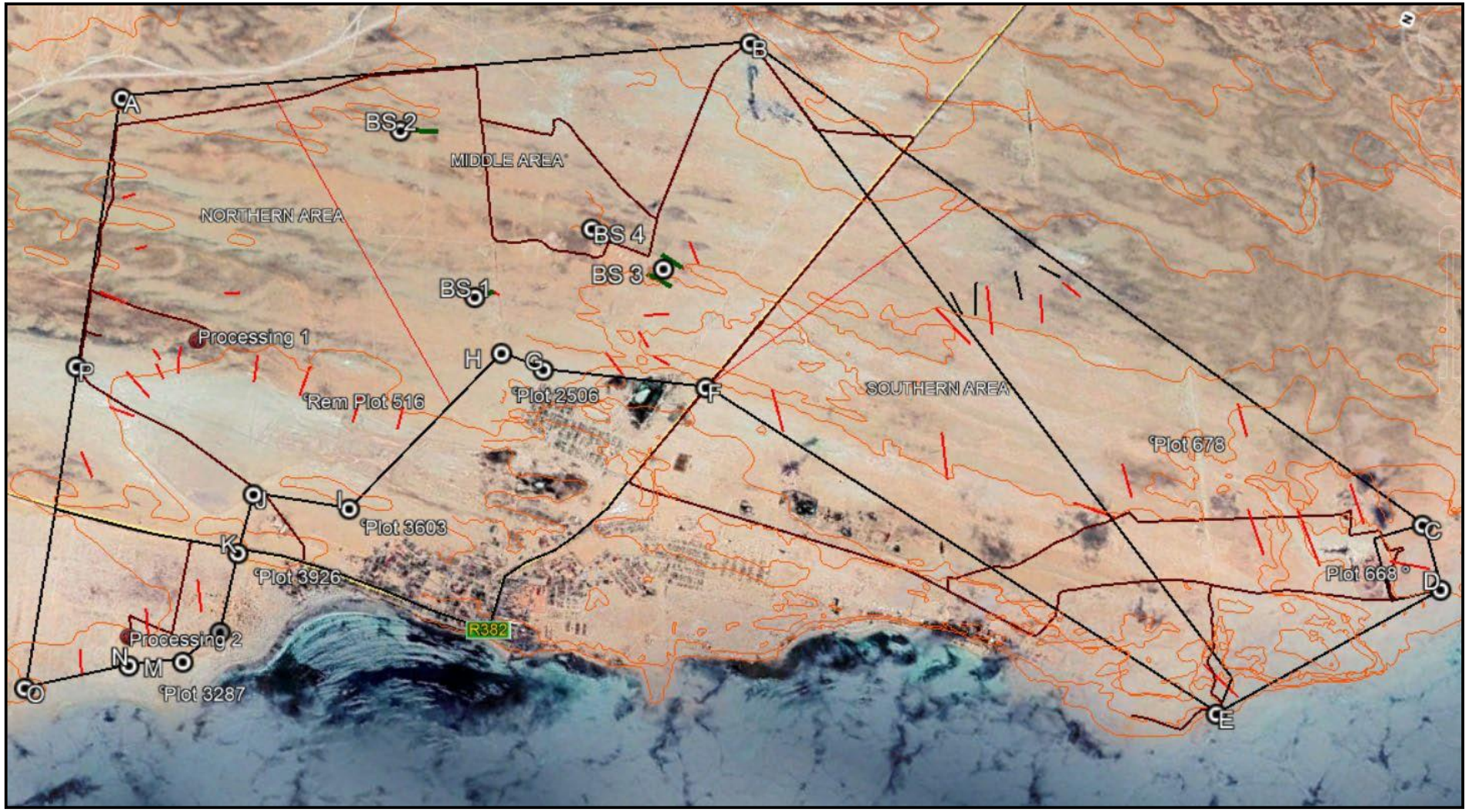


Figure 8: Proposed location of bulk samples within the application area determined through the previous exploration.

3.5 Listed Activities

Table 5: Listed and Specified Activities

NAME OF ACTIVITY	The aerial extent of the Activity Ha or m²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
The operation directly relates to the prospecting of a mineral resource (diamonds) and requires a prospecting right in terms of section 16 of the MPRDA. • Refer to Figure 7 and Figure 8. • Accessing the site via existing tracks and access roads to the area. • Prospecting pits will be developed as shown in Figure 4 • After results are logged the pit will be backfilled immediately for security and safety reasons before the project is moved to the next pit position. • In case of a sudden closure of the project, there will only be one open pit to be dealt with as part of final decommissioning and rehabilitation. • Bulk samples will be developed as shown in Figure 5. • The exact location of the plant site is directly related to the locality of bulk samples as is the location of the haul roads between the plant and the trenches. This will only be determined once the pitting operation has been completed. • Sea water will be extracted from inter-tidal pools with a portable petrol-driven mono pump via a 50mm surface pipeline and the water will be stored in 3 x 10 0001 plastic tanks. • Making use of one rotary pan plant where the sea water will wash the excavated material. The sea water will be returned from the dewatering screen for recycling. • Tailings and Fine residue or slimes will be generated from the processing plant and will be	2212 Ha	X	**GNR 983 Listing Notice 1 of 2014 (dated 8 December 2014), as amended by GNR 517 in GG no. 44701 dated 11 June 2021:** **LN1 Activity 20:** Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right.	**GNR 921 (dated 29/11/2013):** **Category A: Construction of facilities and associated structures and infrastructure** **(12) The construction of a facility for a waste management activity listed in Category A of this Schedule (not in isolation to associated waste management activity).**

NAME OF ACTIVITY	The aerial extent of the Activity Ha or m²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
back filled into the excavations. • Temporary stockpiling of topsoil, and overburden in separate stockpiles as shown in Figure 5. • Refuse collection containers. • Mobile ablution facilities				
This operation requires permission in terms of Section 20 of the MPRDA for the removal and disposal of bulk samples of any minerals. The applicant requires 5 000tons ROM for processing to obtain a representative sample for sufficient statistical analysis to complete a resource statement and to determine a grade (CPHT).	5 000Mt	X	**GNR 984 Listing Notice 2 of 2014 (dated 8 December 2014), as amended by GNR 517 IN GG 44701 (dated 11 June 2021):** LN2 Activity 19: The removal and disposal of a mineral, which requires permission stated in terms of Section 20 of the Minerals and Petroleum Resources Development Act, as well as other applicable activity as contained in this Listing Notice, in Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required to exercise the permission. ,	
The rehabilitation, decommissioning and closure of the prospecting operation, which will only be required at final decommissioning and closure.	2212 Ha	X	**GNR 983 Listing Notice 1 of 2014 (dated 8 December 2014), as amended by GNR 517 in GG no. 44701 (dated 11 June 2021): LN1 Activity 20:** Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right	**GNR 921 (dated 29/11/ 2013) Category A:** Decommissioning of facilities and associated structures and infrastructure (14) The decommissioning of a facility for a waste management activity listed in Category A or B of this schedule.
Excavations will require the clearance of an area of 1 hectare or more of indigenous vegetation.	Pits and trenches combined have a footprint of ±6 hectares	X	**GNR 983 Listing Notice 1 of 2014 (dated 8 December 2014), as amended by GNR 517 in GG no. 44701 dated 11 June 2021: LN1 Activity 20:** Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other	No

NAME OF ACTIVITY	The aerial extent of the Activity Ha or m²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
			applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right.	
Excavations will require the clearance of an area of 1 hectare or more of indigenous vegetation.	Pits and trenches combined have a footprint of ±6 hectares	X	**GNR 983 Listing Notice 1 of 2014 (dated 8 December 2014), as amended by GNR 517 in GG no. 44701 dated 11 June 2021: LN1 Activity 20:** Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right.	No
No excavations are expected within a watercourse or within 32m of a watercourse. If applicable then a water use license or general authorisation in terms of Section 21 (c) for impeding or diverting the flow of water in a watercourse and 21 (i) altering the bed, banks, course or characteristics of a watercourse will be applied for.	No drainage channels are present. Salt pan and depression wetland watercourses within project site to be avoided.	X	**GNR 983 Listing Notice 1 of 2014 (dated 8 December 2014), as amended by GNR 517 in GG no. 44701 dated 11 June 2021: LN1 Activity 20:** Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right.	No
The continuous lengthening (and rehabilitation) of haul roads 8m wide with no reserve were applicable to the development of sections of new haul and access roads, not to the upgrading of existing roads where potential realignment of roads could be required. The objective is not to scrape and clear access roads for the pit sampling, with roots remaining intact to allow for re-growth. Only required during phase 3 Bulk Sampling The exact location of the plant site is directly related to the locality of trenches as is the location of the haul	± 5000m² total over the area	X	**GNR 983 Listing Notice 1 of 2014 (dated 8 December 2014), as amended by GNR 517 in GG no. 44701 dated 11 June 2021: LN1 Activity 20:** Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right.	No

NAME OF ACTIVITY	The aerial extent of the Activity Ha or m²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
roads between the plant and the trenches. This will only be determined once the pitting operation has been completed				
The continuous establishment and reclamation of temporary stockpiles resulting from activities that require a prospecting right	Pits and trenches combined have a stockpile volume of 146320m³	X	**GNR 983 Listing Notice 1 of 2014 (dated 8 December 2014), as amended by GNR 517 in GG no. 44701 (dated 11 June 2021): LN1 Activity 20:** Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, as well as any other applicable activity as contained in this Listing Notice or in Listing Notice 3 of 2014, required to exercise the prospecting right. **GNR 984 Listing Notice 2 of 2014 (dated 8 December 2014), as amended by GNR 517 IN GG 44701 (dated 11 June 2021):** LN2 Activity 19: The removal and disposal of a mineral, which requires permission stated in terms of Section 20 of the Minerals and Petroleum Resources Development Act, as well as other applicable activity as contained in this Listing Notice, in Listing Notice 1 of 2014 or Listing Notice 3 of 2014, required to exercise the permission	**GNR 633 (dated 24/07/2015): Category A: Residue stockpiles or residue deposits** (15) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a prospecting right or mining permit in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). **GNR 632 (dated 24/07/2015):** Regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits from a Prospecting, Mining, Exploration or Production Operation
OTHER ACTIVITIES **(Associated infrastructure not considered to be listed activities)**				
Temporary Service and wash bay Storage Facilities Waste Management Facilities Ablution Facilities Processing plant	±0.5Ha	Not listed	Fence processing and logistics area. The exact location of the plant site is directly related to the locality of trenches as is the location of the haul roads between the plant and the trenches. This will only be determined once the pitting operation has been completed	
Storage of fuel for the generators will be in a bunded area and will be less than 80m³	< 80m³	Not listed	100l Fuel bowser to be used for supply of fuels	

NAME OF ACTIVITY	The aerial extent of the Activity Ha or m²	LISTED ACTIVITY	APPLICABLE LISTING NOTICE	WASTE MANAGEMENT AUTHORISATION
The establishment of a fine residue deposit (slimes dam) resulting from activities which require a prospecting right in terms of section 16 of the MPRDA	±2 475m³	Not listed	Fine residue or slimes will be back filled together with tailings. The slime's that are discharge after de- watering is very dry	
Process water pipeline of unknown length but less than 1000m Pipelines for the bulk transportation of process water with a diameter of <0.36 m and a peak throughput of < 120 L Is.		Not listed	Seawater will be used as process water and trucked to the processing plant and the water will be stored in 3 x 10 000-litre plastic tanks. No infrastructure will be required at the intake.	

4 POLICY & LEGISLATIVE CONTEXT

4.1 Table of Applicable Legislation and Guidelines

Table 6: Applicable Legislation and Guidelines

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
Constitution of South Africa, specifically everyone has a right; a. to an environment that is not harmful to their health or wellbeing; and b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: i. prevent pollution and ecological degradation; ii. promote conservation; and iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.	Prospecting Right activities	The prospecting right activities shall be conducted in such a manner that significant environmental impacts are avoided, where significant impacts cannot altogether avoid be minimised and mitigated to protect the environmental right of South Africans.
Minerals and Petroleum Resources Development Act (No 28 of 2002) [MPRDA] Section 24 (as amended) **MPRDA Regulations as amended by GNR 420 of 27 March 2020.** • The revised MPRDA Regulations requires meaningful consultation on the contents of the Social and Labour Plan to ensure that it addresses the relevant needs and is aligned to the updated Municipal Integrated Development Plans. • The consultation with landowners, lawful occupiers and interested and affected persons is required in terms of the public participation process prescribed in the EIA Regulations.	Application to the DMR for a prospecting right in terms of Section 16 and 20.	The conditions and requirements attached to the granting of the Prospecting Right will apply to the prospecting activities. DMR is the Competent Authority (CA) for this NEMA and NEM: WA application.
National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA]	Application to the DMR for Environmental Authorisation in terms of the 2014 EIA Regulations as amended by the 2021 EIA Regulations. Refer to Table 6 for a list of activities.	An Application for Environmental Authorisation must be submitted to DMR for an Environmental Authorisation (EA). The listed activities in Table 6 that are triggered determine the Environmental Authorisation (EA) application process to be followed, which is an EIA for this Prospecting Right. The appropriate EA must be obtained before proceeding with any prospecting activities in terms of the prospecting right application. The compilation of this Environmental Impact Assessment Report and the Public

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
		Participation Process is required in terms of NEMA.
National Environmental Management Act, 1998 (Act No. 107 of 1998): Financial Provisions Regulations in GNR 1147 (dated 20/11/2015), as amended by GNR 495 (dated 11/06/2021)	The Final Rehabilitation, Decommissioning and Mine Closure Plan will be included in the DEIR, page 403	The purpose of these Regulations is to regulate the determination and making of financial provision as contemplated in the Act for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts from prospecting, exploration, mining or production operations through the lifespan of such operations and latent or residual environmental impacts that may become known in the future. The Final Rehabilitation, Decommissioning and Mine Closure Plan will be included in the DEIR in APPENDIX F: FINAL REHABILITATION, DECOMMISSIONING AND CLOSURE PLAN, page 403.
National Environmental Management: Waste Act, (Act 59 of 2008) [NEM:WA] (as amended) **Waste listed activities in GNR 921 (dated 29/11/ 2013)**	Refer to Table 5 for the waste listed activities in GNR 921 (dated 29/11/ 2013) Category B: Disposal of waste on land.	The listed activities that are triggered determine the Environmental Authorisation (EA) application process to be followed. The Application for Environmental Authorization has included the waste listed activities as shown in Table 5. Mitigation measures are included in Table 14, in the EMPr on page 100, in the Impact Tables (Appendix E, page 366) and Closure Plan (Appendix F, page 403).
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) [NEMBA] National list of ecosystems that are threatened and in need of protection, 2011 (in GN 1002 dated 2 December 2011)	Section 8.1.8 & 8.1.9. Figure 10, Figure 13, Figure 14, Figure 15, Figure 16, Figure 19 and Figure 20	There are no listed Critically Endangered, Endangered or Vulnerable ecosystems on site. The site is not located within a CBA Area and not within a River FEPA sub-catchment. The salt pan is classified as a NFEPA Wetland.
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) [NEMBA] **Alien and Invasive Species List, 2016 (in GN No. 864 dated 29 July 2016)**	Section 8.1.6	Alien invasive vegetation management is included in the EMPr on page 100.
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004). National Dust Control Regulations in GN R827 of 1 November 2013	Section 8.1.10	Dust control measures are to be included in the EMPr on page 100
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	Section 8.1.12	A Heritage Impact Assessment (page 199) and Paleontological Impact Assessment (page 315), which includes comments on heritage, archaeological and palaeontological resources, have been prepared and is attached in **Appendix D**. It will be submitted to SAHRA for comment.
National Water Act, 36 (Act 36 of 1998) **Government Gazette Notice: GN 509 in GG 40229 of 26 August 2016 – General**	Section 8.1.8 for a description of surface water resources in the	Process water supply is to be sourced from the sea located approximately 250m from the processing plant. Sea water will be extracted

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
Authorisation In Terms Of Section 39 Of The National Water Act, 1998 (Act No. 36 Of 1998) For Water Uses as Defined In Section 21(c) Or Section 21(i)	local area, and Figure 10 & Figure 16.	from inter-tidal pools with a portable petrol-driven mono pump via a 50mm surface pipeline and the water will be stored in 3 x 10 0001 plastic tanks. No permanent or temporary infrastructure will be required at the intake. The sea water will be returned from the dewatering screen for recycling. Potable water will be trucked in and stored in water tanks for domestic consumption. A Water Use License or General Authorisation for Section 21 (c) and (i) may be required should the bulk sampling show that the trenches will impact on the Salt Pan or wetland depression.
Promotion of Administrative Justice Act, 2000 (Act 3 of 2000) [PAJA]	The decision by the Competent Authority	Gives effect to section 33 of the Constitution that requires that "Everyone has the right to administrative action that is lawful, reasonable and procedurally fair". All administrative actions must be based on the relevant considerations
Protection of Personal Information Act, 2013 (Act No. 14 of 2013) (POPIA)	Section 7, APPENDIX B: PUBLIC PARTICIPATION REPORT, page 132	The guidance document provided by the Department of Forestry, Fisheries and the Environment was used to determine the information to be included or excluded from the public domain to protect private or personal information.
Municipal Plans and Policies		
Northern Cape Provincial Spatial Development Framework (NCPSDF)	Section 5.5	Sustainable development is a key consideration as addressed in this impact assessment report.
Northern Cape Provincial Growth and Development Strategy 2004-2014 (NCPGDS)	Section 5.6	Sustainable development is a key consideration as addressed in this impact assessment report.
Standards, Guidelines and Spatial Tools		
Mining and Biodiversity Guideline: 2013 Mainstreaming biodiversity into the mining sector. Pretoria.	Section 5.1 & 8.1.9 Figure 21	The mitigation measures to address and mitigate the potential impacts of the prospecting are included in the EMPr on page 100.
DEA Guideline on Need & Desirability (2017)	Section 5.7	Refer to Section 5.7
DEA Guideline on PPP DMR Guideline on Consultation with Communities and I&APs (undated)	Section 7, Table 6 & Appendix B, page 132.	Refer to Section 7 & Table 6 and **Appendix B, page 132**
DEAT Integrated Environmental Management Information Series 5: Impact Significance (2002)	Section 8	Included in the Impact Tables attached as **Appendix E, page 366**.
DEAT Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004)	Section 8	Included in the Impact Tables attached as **Appendix E, page 366**.
SANBI BGIS databases (www.bgis.sanbi.org)	Baseline environmental description and Figures 11 to 17.	Used during desktop research to identify sensitive environments within the prospecting permit area.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE WHERE APPLIED	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
SANS 1929:2005 Edition 1.1 – Ambient Air Quality Limits for Common Pollutants	Management and monitoring measures	The standard for dust fallout. Dust mitigation measures are to be included in the EMPr, **page 132**.
Clarity On Applicability Of The Protection Of Personal Information Act, 2013 To Requirements Of The Environmental Impact Assessment Regulations, 2014 Relating To Registers Of Interested And Affected Parties And The Inclusion Of Comments In Reports (circulated on 3 September 2021)	Section 7	The guidance document provided by the Department of Forestry, Fisheries and the Environment was used to determine the information to be included or excluded from the public domain.

5 NEED & DESIRABILITY OF THE PROPOSED ACTIVITIES

5.1 Mining and Biodiversity Guidelines (2013)

The Mining and Biodiversity Guidelines (2013)[5] state that: "Sustainable development is enshrined in South Africa's Constitution and laws. The need to sustain biodiversity is directly or indirectly referred to in a number of Acts, not least the National Environmental Management: Biodiversity Act (No. 10 of 2004) (hereafter referred to as the Biodiversity Act) and is fundamental to the notion of sustainable development. International guidelines and commitments, as well as national policies and strategies, are important in creating a shared vision for sustainable development in South Africa".

The Department of Mineral Resources (DMR), as custodian of South Africa's mineral resources, is tasked with enabling the sustainable development of these resources. This includes giving effect to the constitutional requirement to "prevent pollution and ecological degradation; promote conservation, and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development"[6].

The primary environmental objective of the MPRDA is to give effect to the "environmental right"[7] contained in the South African Constitution. The MPRDA further requires the Minister to ensure the sustainable development of South Africa's mineral resources, within the framework of national environmental policies, norms and standards, while promoting economic and social development.

The Mining and Biodiversity Guidelines (2013) document identifies four categories of biodiversity priority areas in relation to their biodiversity importance and implications for mining/prospecting. The categories are Category A: Biodiversity priority area which is legally protected and mining is prohibited; Category B: Highest Biodiversity importance – highest risk for mining; Category C: High Biodiversity Importance – high risk to mining; and "Category D: Moderate Biodiversity Importance" – moderate risk for mining. Category B and Category C require an environmental impact assessment process to address the issues of sustainability.

Refer to Figure 21 on page 60, which shows the prospecting right area in relation to the Mining and Biodiversity Guidelines database (SANBI BGIS). The salt pan is categorized as Category B, and there are a few patches of Category B towards the southern-most section of the prospecting right area in close proximity to the seashore. All the prospecting pits are located outside these Category B areas. The remaining area of the prospecting right is categorized as Category C where the prospecting pits are located.

The latest conservation mapping for the Northern Cape is mapped in Figure 20 below on page 59 indicating that there are no areas of conservation significance within the prospecting area, including the salt pan. The SANBI BGIS water resources mapping indicates the salt pan and wetland depression, as shown in Figure 16.

5.2 Diamond Resources Supply and Employment Benefits

Identifying personnel requirements for prospecting is difficult as long periods are used for data processing where no personnel are required. During the bulk sampling phase, the full labour force will total 13 employees, 7 of which are expected to be allocated to females.

Services that will be outsourced and that will provide job security will be mine health and safety, environmental monitoring services and compliance officer, training, security, consultant geologist, main workshop and auditing/tax/accounting services.

[5] Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute. 2013. Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector. Pretoria.

[6] Constitution of the Republic of South Africa (No. 108 of 1996).

[7] Section 24 of the Constitution states that "everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that: prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

5.3 Richtersveld Local Municipality IDP (Draft IDP 2020)

The Richtersveld Local Municipality is a Category B municipality in the Namakwa District of the Northern Cape Province. It is the smallest municipality of six in the district, making up only 6% of its geographical area.

In the Constitution of South Africa (108 of 1996) the objectives of a municipality or local government structure are described as follows under "section 152. (1) The objects of local government are-

(a) to provide democratic and accountable government for local communities;
(b) to ensure the provision of services to communities in a sustainable manner;
(c) to promote social and economic development;
(d) to promote a safe and healthy environment; and
(e) To encourage the involvement of communities and community organisations in the matters of local government".

The vision of the Richtersveld Local Municipality is:

"We should continuously strive to develop all of the resources of the Richtersveld, including its natural, cultural and human resources, in a manner that is sustainable and benefits the people of the region so that our future will be secure." (Annual Report; 2018/2019).

The **Richtersveld Local Municipality** is located within an area of world-class biodiversity and of a unique conservation value. For this reason, Richtersveld Municipality made sustainable development one of their key objectives and with nature reserves in each town, and the LM supports all conservancies, conservation and greening strategies. The Richtersveld Municipality, therefore, promotes sustainable development: sustainable use of resources, sustainable transport, energy efficiency, recycling, sustainable use of water resources, the use of renewable energy and other environmentally friendly practices, and forms part of the Working for Coast Programme.

The Richtersveld Municipality consists of 4 wards. The Prospecting Area covers a large area encompassing Ward 3 and Ward 4 and borders the southern-most boundary of Ward 2.

5.4 Namakwa District Municipality Draft IDP 2017 2018

The vision of the Namaqua District Municipality IDP is: "Namakwa District Municipality, a centre of excellence!"

The Mission Statement is:

- A government institution legislatively mandated to stimulate economic and social transformation within the jurisdiction of the Namakwa District Municipality;
- By fostering partnership with relevant institutions to ensure sustainable development;
- Proactively supporting and capacitating B-municipalities;
- Be a transparent and accountable centre of excellence; and,
- Provide local leadership on environmental sustainability and climate change response.

The Strategic Objectives are

- Ensuring the delivery of basic services which include water, sanitation, electricity and waste management
- Creation of a thousand job opportunities through the community public works programme, as part of 4, 5 million EPWP jobs.
- Transformation of administrative and financial systems of NDM and relevant B-Municipalities, which includes supply chain management
- Ensure the filling of six critical posts (Municipal Manager, Chief Financial Officer (CFO), Town Planner, Town Engineer, Human Resource Manager, Communication Manager) in all municipalities in the District
- Clean audits for all Municipalities.
- Building municipal capacity to enable municipalities to collect their revenue.
- Ensure sustainable economic and social transformation in the District.
- A society with a renewed sense of identity and confidence in their skills and knowledge.
- Bridging the digital divide.

- Ensure the implementation of environmentally sustainable practices, along with an integrated approach to addressing climate change response, across all sectors.

The Namakwa District Municipality adheres to the values contained in the Batho Pele Principles.

The effects of climate change, such as flood events, on the proposed prospecting project will be mitigated as per the measures to be contained in the EMPr, page 132. The mitigation for emissions of greenhouse gases from vehicles and machinery associated with the prospecting activities will be addressed in the EMPr, page 132 and Closure and Rehabilitation Plan, page 403.

5.5 Northern Cape Provincial Spatial Development Framework (NCPSDF)

The NCPSDF states that: "Cape is not one of South Africa's richest provinces in monetary terms. Accordingly, there is a need for coherent prioritisation of projects within a spatial economic framework that takes due cognisance of environmental realities and the imperative to create a developmental state". The NCPSDF was designed as an integrated planning and management tool for all spheres of government to facilitate ongoing sustainable development throughout the province.

The NCPSDF, together with the Provincial Growth and Development Strategy (PGDS), is set to fulfil an important role as a spatial and strategic guideline that addresses the key challenges of poverty, inequality and environmental degradation through the innovative use of the resources (capital) of the province for the benefit of all concerned."

The potential for job security, employment and skills transfer are identified as positive environmental impacts in this DSR. The potential negative environmental impacts can be mitigated through the implementation of the EMPr and the Closure and Rehabilitation Plan, to ensure a sustainable prospecting activity.

5.6 Northern Cape Provincial Growth and Development Strategy 2004 – 2014 (NCPGDS)

The NCPGDS has the following vision for the Province: "Building a prosperous, sustainable growing provincial economy to reduce poverty and improve social development." The strategy for the growth and development of the Province is guided by the following key principles:

- Equality – notwithstanding the need to advance persons previously disadvantaged, development planning should ensure that all persons should be treated equally;
- Efficiency –the promotion of the optimal utilisation of existing physical, human and financial resources;
- Integration – the integration of spatially coherent regional and local economic development and improved service delivery systems.
- Good Governance – the promotion of democratic, participatory, cooperative and accountable systems of governance and the efficient and effective administration of development institutions;
- Sustainability – the promotion of economic and social development through the sustainable management and utilisation of natural resources and the maintenance of the productive value of the physical environment;
- Batho Pele – the placement of people and their needs at the forefront of its concern and serve their physical, psychological, developmental, economic, social and cultural interests equitably.

5.7 DEA Guideline on Need and Desirability (2017)

As referenced in the DEA Guideline on Need and Desirability (2017), NEMA defines "evaluation" as "the process of ascertaining the relative importance or significance of information, in the light of people's values, preferences and judgements, to make a decision." In evaluating each impact (negative and positive) in terms of each of the aspects of the environment, "need and desirability" must specifically be considered in the analysis of each impact of the proposed activity. However, to determine if the proposed activity is the best option when considering "need and desirability", it must also be informed by the sum of all the impacts considered holistically. In this regard "need and desirability" also becomes the impact summary with regard to the proposed activity. The impact summary will be included in the EIR.

These Guidelines state that: "In considering the impact summary it must be remembered that ultimately the aim of EIA is to identify, predict and evaluate the actual and potential risks for and impacts on the

geographical, physical, biological, social, economic and cultural aspects of the environment, to find the alternatives and options that best avoid negative impacts altogether, or where negative impacts cannot be avoided, to minimise and manage negative impacts to acceptable levels, while optimising positive impacts, to ensure that ecologically sustainable development and justifiable social and economic development outcomes are achieved".

The **principles of Integrated Environmental Management (IEM)** as set out in Section 23 of NEMA have been considered in this scoping environmental assessment and will be applied in the EIR, EMPr and Closure Report, as explained below.

- **Environmental management placing people and their needs at forefront of its concern, and serve their physical, physiological, developmental, cultural and social interests equitably** – This process will be undertaken transparently and all effort will be made to involve all the relevant stakeholders and Interested and Affected Parties. I.e. Public participation will be undertaken to obtain the issues/concerns/comments of the affected people for input into the process.
- **Socially, environmentally and economically sustainable development** – All aspects of the receiving environment and how this will be impacted has been considered and investigated to ensure a minimum detrimental impact to the environment. Where the impact could not be avoided, suitable and effective mitigation measures were proposed to ensure that the impact is mitigated. i.e. this report along with the EMPr (to be included in the EIA Phase) proposes mitigation measures that will minimise the negative impacts of the proposal on the environment.
- **Consideration for ecosystem disturbance and loss of biodiversity** – the project site is not located in a CBA or FEPA, but is in close proximity to a salt pan and wetland depression. Ecosystem disturbance and loss of biodiversity will be considered in the impact assessment. Rehabilitation back to the natural state is a key component and will be undertaken in a phased manner as the prospecting activities progress. This report together with the EMPr and Closure Plan proposes mitigation measures that will minimise the impacts of the proposal on the environment.
- **Pollution and environmental degradation** – The implementation of recommendations made and proposed mitigations to be detailed in the EIR and Environmental Management Programme Report (EMPr) on page 132, and Closure Plan on page 403, will ensure minimum environmental degradation. Erosion and dust have been identified and detailed mitigation measures will be included in the EMPr in the EIA phase to minimise the impacts.
- **Landscape disturbance** – All aspects of the receiving environment and how this will be impacted have been considered and investigated at a scoping level to ensure a minimum detrimental impact to the environment. Where the impact could not be avoided, suitable and effective mitigation measures will be detailed in the EIR, EMPr and Closure Plan to ensure that the impact is mitigated.
- **Waste avoidance, minimisation and recycling** – These aspects were considered and incorporated into the operational component of the project, and mitigation measures were included in the EMPr on page 133.
- **Responsible and equitable use of non-renewable resources** – These aspects have been considered and there is not much scope to reduce the use of non-renewable resources, such as vehicle transport or the use of diesel in the genset.
- **Avoidance, minimisation and remedying of environmental impacts** - All aspects of the receiving environment and how this will be impacted have been considered and investigated to ensure a minimum detrimental impact to the environment. Where the impact could not be avoided, suitable and effective mitigation measures will be proposed to ensure that the impact is mitigated. A number of mitigation measures will be detailed to minimise the impact of the proposal on the environment.
- **Interests, needs and values of Interested and Affected Parties** – This process has been undertaken transparently and all effort is being made to involve all the relevant stakeholders and Interested and Affected Parties (I&APs). The DEIAR is being made available to all identified I&APs to obtain comments on the proposed development.
- **Access of information** – Potential Interested and Affected Parties will be notified of the proposal and the availability of the Draft EIAR (DEIAR). They will also be notified of having the opportunity to register as an I&AP and they will be kept informed during the EIA process.

- **Promotion of community well-being and empowerment** – This process will be undertaken transparently and all efforts will be made to involve all the relevant stakeholders and I&APs.
- Potential impacts on the biophysical environment and socio-economic conditions have been assessed, and steps have been taken to mitigate negative impacts and enhance positive impacts. Any mitigation measures from SAHRA will be included. Adequate and appropriate opportunities will be provided for public participation. Environmental attributes have been considered based on the available information, and environmental management practices have been identified and established to ensure that the proposed activities will proceed in accordance with the principles of IEM**.**

6 DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PREFERRED SITE, ACTIVITY & ALTERNATIVE

6.1 The process to Reach the Proposed Preferred Alternative

With reference to the Mine Site Plan provided in Figure 7 and the location of the individual activities on-site, details are provided of the alternatives considered with respect to the:

(a) Property on which or location where it is proposed to undertake the activity;
(b) Type of activity to be undertaken;
(c) Design or layout of the activity;
(d) Technology to be used in the activity;
(e) Operational aspects of the activity; and
(f) Option of not implementing the activity.

Appendix 2 Section 2 (h) (i) of the EIA Regulations, 2014, requires that all S&EIR processes must identify and describe feasible and reasonable alternatives. Alternatives considered during the screening phases of the project are described below.

6.2 Location or Site Alternatives

6.2.1 Infrastructure and bulk services

- The location of a prospecting right is determined by the shape, position and orientation of the mineral resource as shown in Figure 7 & Figure 8. The prospecting pits have been identified based on the geological formations of the area and previous prospecting activities labelled in Figure 7, as “Old Alexkor exploration trench” and “Old Alexkor drill line”. The results of the existing exploration program have indicated that the paleo-channel running through the saltpan southwards and then westwards comprises a very promising target measuring about 3.5km long by 500 meters wide. The raised marine beaches on the rest of the property also comprise attractive targets.
- Electricity for the processing plant will be provided by a diesel generator, therefore no electrical powerlines are required.
- There are existing access roads and tracks throughout the prospecting right area, providing good access for haul trucks in most places. Where existing tracks will need to be upgraded or new roads created these will be constructed in accordance with the EMPr on page 100, to be developed in the EIA Phase to mitigate any impacts.
- Electricity for the processing plant will be provided by a diesel generator, therefore no electricity powerlines are required.
- The prospecting right area is adjacent (encompassing) to the town of Port Nolloth, ensuring convenient access to everyday services, accommodation, and the registered landfill.

6.2.2 Site Alternatives for Processing Plant, including Tailings Storage Facility

- The mobile processing plant is to be located in the existing excavation from historical mining activities located in the north-western section of the prospecting area, approximately 230 metres from the edge of the beach and approximately 250m from the high water mark as shown in Figure 9 on page 40, and in Photographs Series 1.
- The close proximity of the processing plant to the sea is important for the sea water extraction required for the washing of the alluvial material.
- The existing disturbed footprint combined with the close proximity to the sea intake makes this location for the processing plant the only alternative for consideration.
- The tailings containing seawater and alluvial deposit that has been processed will be deposited into the excavated area where the mobile processing plants is located. The composition of the tailings is likely to have a higher sodium content due to the sea water, than the surrounding sub-surface sand in the

excavation. The close proximity to the marine environment, a total of approximately 230m from the High Water Mark[8] is likely to mean that the water table is saline.

6.3 Type of Activity

The Applicant is not the landowner, and therefore it would not be realistic for this company to propose another type of activity as their core business is prospecting and mining. Although the proposed prospecting activity takes place over a long time period, the best post-mining land use alternative is to return the site to its natural state. The holder of a prospecting right is required to rehabilitate the environment affected by prospecting or bulk sampling to its natural state or another predetermined land use. Other activity alternatives have therefore not been considered as the purpose of the proposed project is to prospect for diamonds within the Prospecting Right application area as shown in Figure 3.

The only other activity required to be assessed in terms of NEMA is the "do-nothing" or "no-go" alternative, as detailed further in section 6.7 below.

6.4 Design or Layout of Activity

The design or layout of a prospecting project is determined by the shape, position and orientation of the mineral resource as described in Section 6.2 above.

6.5 Technology Alternatives

The technology used in a prospecting project is determined by the type, shape, position and orientation of the mineral resource. The technology to be applied is applicable to the prospecting approach and programme, as the findings determine the level of bulk sampling.

The technology to be applied is:

- Washing and sorting of the alluvial material with a Mobile Processing Plant as per the process explained in Figure 6 above.
- Seawater intake to be used in washing the alluvial material during processing. The area is water-scarce, and seawater can be used without affecting the machinery or alluvial ore and negates the need to look for groundwater or to water truck water in for processing. The processed seawater will be recycled.
- No permanent infrastructure is present or will be required for logistics due to the small scale of operations and the close proximity of the Port Nolloth settlement.
- Diesel generator to provide electricity for the processing plant and seawater intake, therefore no need to construct powerlines to the processing plant.

6.6 Operational alternatives

- Phase 1: Literature Study Imagery Analysis Geological Mapping Geophysical Survey
  During this phase, the desktop studies and studying of available information on surrounding exploration work that has been undertaken will be supplemented by field observations. Ground Resistivity measurements will also be used to "home in" on target areas.

- Phase 2: Preliminary evaluation - Prospecting pits
  The objective of the preliminary evaluation phase is to determine a ballpark estimate of grade and size and thus possible in-situ value of the deposit. This is normally established by collecting mini samples by the most cost-effective method available. Due to the relative shallow overburden prospecting pits is the most common technique and will be employed during this exploration program to allow for geological samples.

Pit development will be the same as for trench development (Bulk Sampling) as shown in **Figure 4 (page 15 and Figure 5 (page 10)**, but on a much smaller scale. There will only ever be three prospecting pits open at any given time, one in the process of rehabilitation, one that is operational and one in the process of

[8] The distance has been measured on Google Earth from the outer-most edge of the area marked as the processing plant on Figure 2 and Figure 11 to the edge of the High Water Mark (as defined by the National Environmental Management: Integrated Coastal Management Act, Act 24 of 2008 (NEM: ICMA), as amended by NEM: ICMA Act 36 of 2014) as estimated from a desk-top perspective.

development and it is anticipated that no more than 30 such pits will be developed. After results are logged the pit will be backfilled immediately for security and safety reasons before the project is moved to the next pit position. In case of a sudden closure of the project, there will only be one open pit to be dealt with as part of final decommissioning and rehabilitation.

There are therefore no other operational alternatives for consideration.

6.7 The No-go Alternative

The No-Go Alternative will mean that the potential for increasing the supply of diamonds will not be realised. There will be no supply of diamonds in the local and international market, and no generation of much needed employment opportunities. The town of Port Nolloth has a high unemployment rate, as does most of the local municipality with the decline in mining a decade ago resulting in existing mines being closed. The inflow of revenue and employment opportunities will have a very positive spin-off locally and regionally.

6.8 Summary of Alternatives

The assessment of alternatives must at all times include the "no-go" option as a baseline against which all other alternatives must be measured. The "no go" alternative will therefore be further assessed together with the preferred and only alternative in the impact rating component of the EIA Phase.

The project site has been selected based on the results from prospecting. The layout and technology of the prospecting pits and the associated infrastructure comprising the mobile processing plant has been determined by the shape, position and orientation of the mineral resource. Refer to **Figure 7 (page 15) and Figure 8 (page 16).** The existing infrastructure and access roads will be utilised.

The operational approach is practical and based on best practice to ensure a phased prospecting approach with only three prospecting pits open at any one time, one in the process of rehabilitation, one that is operational and one in the process of development.

In summary, therefore:

- **The Preferred Alternative is the Prospecting of Diamonds, as per the locations shown in Figure 7 (page 15) and Figure 8 (page 16)**
- The preferred and only **location** alternative of the prospecting activity is as per **Figure 7 (page 15) and Figure 8 (page 16)**, with the processing plant and tailings disposal location within an existing historical mining excavation in close proximity to the sea to access seawater for processing. The existing access roads will be utilised and sections upgraded or new routes developed as required. No electricity powerline connections are required.
- The preferred **activity** alternative is the prospecting for alluvial diamonds based on the mineral resources investigated during the previous prospecting.
- The preferred **technology** alternative is the use of the mobile processing plant, diesel generators and seawater for the processing as described in Section 6.5 above.
- The preferred **operational** alternative is the method of having three prospecting pits open at any given time, one in the process of rehabilitation, one that is operational and one in the process of development.

There are, therefore, no other reasonable or feasible sites, layouts, activities, technologies, or operational alternatives for further consideration in the impact assessment component, other than the mandatory "no-go" alternative that must be assessed for comparison purposes as the environmental baseline.

7 PUBLIC PARTICIPATION PROCESS

7.1 Introduction

The public participation process has been conducted according to the requirements as prescribed in Regulations 40 to 44 of the EIA Regulations, 2014 (as amended). Full details of the public participation process conducted including copies of all supporting documents (e.g. the information provided to Interested & Affected Parties (I&APs) and the comments received) were included in Appendix B of the Final Scoping Report submitted to DMR. Any comments received as part of the dEIAR consultation will be included in APPENDIX B: PUBLIC PARTICIPATION REPORT, page 132.

The public participation process for the EIA Phase will also comply with the requirements of the Protection of Personal Information Act, 2013 (Act No. 14 of 2013) (POPIA) and the guidance document by the Department of Forestry, Fisheries and the Environment relating to registers of interested and affected parties and the inclusion of comments in reports.

The commencement of the EIA Phase is detailed in section 7.3 below.

7.2 Public Consultation on Draft Scoping Report

The Draft Scoping Report was made available on the previous consultant's, Green Direction Sustainability Consulting (Pty) Ltd, website, and the project notification letter with registration and comment form was emailed to relevant Government Departments, landowners and adjacent neighbours and other Interested and/or Affected Parties (I&APs).

The following public consultation process took place, proof of which was attached as Appendix B in the FSR:

- The commenting period of 30 days on the Draft Scoping Report was from 25 January 2021 and ended on 25 February 2021.
- Comments and requests to be registered were required to be submitted in writing.
- A Registration and Comment Form was included with the Project Notice.
- A hard copy of the Draft Scoping Report (DSR) was placed at the Local Municipality offices in Port Nolloth, and a copy was made available for download off the Green Direction website, details of which were included in the project notice.
- Site notices were placed on-site at the access point to the solid waste site, access to the salt pan, and access to the mariculture park.
- In addition, notices were placed at the Municipality and Spar in Port Nolloth.
- Comments were received from from the "West Coast Brown Hyena Project", and from of the /Ai-/Ai-Richtersveld Transfrontier Park (RSA side) on behalf of the SANParks (Richtersveld National Park), as included in Table 7 below, and attached at Appendix B of the FSR.

7.3 The comment period on DEIR

Registered I&APs (organs of state) will be notified of the commencement of the EIA Phase, via email notification and the notice letter of commencement of the EIA Phase. The letter will also contain the following consent note: "*By registering as an Interested and Affected Party, you give your consent to the processing of personal information, as contemplated in the Protection of Personal Information Act, 2013 (Act no. 4 of 2013) for the purposes of this particular project. You also agree that by submitting a comment in response to the application for environmental authorisation, your contact details may be reflected, where required by legislation, in all reports that must be compiled and submitted to the general public, registered stakeholders, as well as the organ(s) of state that is/ are charged with consideration and decision-making in respect of this application.*"

The comment period on the DEIR is from **23 September 2021 to 25 October 2021**, excluding 24 September 2021 as a public holiday, as per the EIA Regulations.

7.4 Summary of Issues Raised by I&APs

This table has been completed following the comment period on the DSR that ended on the 25th of February 2021. Any comments received on the DEIR will be recorded in this table in the FEIR in APPENDIX B: PUBLIC PARTICIPATION REPORT, page 132.

Table 7: Summary of Issues Raised by I&APs during Scoping Phase

Interested and Affected Parties **List the names of persons consulted in this column, and Mark with an X where those who must be consulted were consulted.**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant, as per Final Scoping Report**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES					
Landowner	**X**				
Richtersveld Local Municipality		NONE			
Richtersveld Sida Hub Communal Property Association (CPA) currently under Administration by the Applicant: the Acting Director-General: Department of Rural Development and Land Reform		NONE			
Republic of South Africa (Farm 155)		NONE			
Lawful occupier/s of the land					
See below					
Landowners or lawful occupiers on adjacent properties	**X**				
Richtersveld Local Municipality		NONE			
Richtersveld Sida Hub CPA (Farm 155)		NONE			
Alexkor (Farm 1)		NONE			
Municipal Councillor	**X**				
Ward 3 Councillor		NONE			
Ward 4 Councillor		NONE			
Municipality	**X**				
Richtersveld Municipality		NONE			
Namakwa District Municipality		NONE			
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA)	**X**				
Department of Roads and Public Works		NONE			
Communities					

NA					
Dept. Land Affairs	X				
Department of Rural Development and Land Reform		NONE			
Traditional Leaders					
NO IMPACT					
Dept. Environmental Affairs & Nature Conservation	**X**				
Department of Environment and Nature Conservation (DENC)		NONE			
Other Competent Authorities affected	**X**				
Department of Human Settlements, Water and Sanitation (DHSW&S)		NONE			
SAHRA		NONE			
OTHER AFFECTED PARTIES					
None registered					
INTERESTED PARTIES					
from the "West Coast Brown Hyena Project".		30/01/2021	I am a private individual and as such I have an interest in the proposed mining/exploration activities as envisaged in your draft scoping report DMR reference number: NC 30/5/1/1/2/12672 PR. I am particularly concerned at the size and time scale of the proposed operation, the noise from generators, heavy equipment and routes to be used, as well as the environmental impact on the area which, as you note, has a number of endemic species recorded there. In additional I would seek clarity in terms of public access within the boundaries as shown in your Figure 1 & Figure 2 in the event that permission to proceed is approved.	The Screening Tool Reports and Site Sensitivity Verification Report were prepared. (**Appendix C, page 140**). This EIA Report includes the Environmental Management Programme (EMPr) that addresses noise and the management of impacts to the biodiversity of the area associated with prospecting and not mining activities. Public access on existing access roads within the prospecting right area will not be inhibited. Vehicles will follow the traffic rules imposed by the Traffic Act, and mitigation measures will be included in the EMPr to ensure that speed is reduced to prevent animals from being hit by trucks. The prospecting activities area restricted to normal working	Comment attached at **Appendix B of the FSR**. Screening Tool Reports and Site Verification Report are attached at **Appendix C, page 140**.

		As such I am registering as an I&A party in order to be kept informed on progress as well as be given an opportunity to raise questions relating to my concerns. Your document notes that copies are available in Port Nolloth library. The library was closed during lock down level 5 March 2020 and to date has not reopened. Please advise where copies of the report might be obtained for those without access to the internet.	hours, avoiding nighttime and nocturnal animals, such as the brown hyena. You will be kept informed as a registered I&AP. Thank you for bringing this to our attention. A copy was subsequently made available in the Port Nolloth Municipality. No requests for a hard copy for received.	
of the /Ai-/Ai-Richtersveld Transfrontier Park (RSA side) on behalf of the SANParks (Richtersveld National Park).	25/02 2021	As an interested and affected party South African National Parks (SANParks) have been made aware of the proposed mining developments by Dansile Nxikwe Diamonds CC in the greater Richtersveld. Thank you for the opportunity to register as an IAP and comment on the Draft Scoping Report. The Richtersveld National Park (RNP) was declared as a National Park in 1991 in terms of the National Parks Act No. 57 of 1976, (Government Gazette 13457, dated 16 Aug. 1991). The RNP is managed in accordance of a Management Plan approved by Minister Edna Molewa in terms of Sections 39 and 41 of NEM:PAA (Act no.57. of 2003). (i) SANParks legal mandate is to protect, control and manage National Parks and other defined protected	The Screening Tool Reports and Site Sensitivity Verification Report were prepared (**Appendix C, page 140**). This EIA Report includes the Environmental Management Programme (EMPr) that addresses the management of impacts to the biodiversity of the area associated with prospecting, not mining.	Comment attached at **Appendix B of the FSR**. Screening Tool Reports and Site Verification Report attached at **Appendix C, page 140** A copy of "Map 6: Buffer Zone" (referenced from the SANParks Richtersveld National Park, Park Management Plan for the period 2018 – 2028) has been included in the biodiversity section as Figure 22, and an overlay of this buffer zone is shown as Figure 23 and described in Section 8.1.10 of this Report.

		areas and their biological diversity, (S17, NEMPAA, Act .57 of 2003). (ii) Mining is prohibited in National Parks and its buffer zones due to its significant negative effects on the environment including the soil, water resources, geological stability, biodiversity and air quality and therefore SANParks remain opposed to mining in National Parks and its buffer Zones. The RNP management Plan describe mining as a "threat" to the environment. Due to the nature of the activities within the SANParks mandate, and the reason for the RNP's proclamation, the current mining activities within and adjacent to the Park needs to be monitored closely in order to prevent any irreparable damage to cultural, conservation or tourism related matters, (in terms of guidelines, regulations and in liaison with the Minister of Environment, Forestry and Fisheries, (DEFF), Ms Barbara Creecy). **In light of the above information the following is to be noted:** SANParks reserves the right to revise initial comments based on additional information that may be received.		

8 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE PROJECT SITE

8.1 Type of Environment Affected by the Proposed Activity

8.1.1 Regional Setting

Namaqualand is a unique and diverse environment owing in large part to the presence of four distinct biogeographically regions within its boundaries. The Orange River valley lies to the north and is characterized by very dry desert conditions. In the west, the area is composed of coastal plains, which transition into granite hills that straddle the escarpment, before transforming into low lying Bushman land plains to the East of Springbok.

8.1.2 Geology and Soils

The area is underlain by basement rocks of the Namaqua Metamorphic Belt of Proterozoic age and Cenozoic deposits (calcrete, clastic sediments and sand of Quaternary and Tertiary age). Refer to Figure 9 below. The edge of the Archaean Kaapvaal Craton lies about 500km to the east of this province. The Namaqua metamorphics are comprised mainly of gneissic rocks of the Bushmanland Group that were later intruded on by a variety of granitic rocks. The metamorphic event that impacted this suite of rocks is dated 1800 Ma. Younger flat-lying unaltered sedimentary rocks of the Nama Group occur as hills throughout this area, particularly in the area between Springbok and the Orange River. The plateau region is partly overlain by the basal Karoo sediments of the Lower Palaeozoic age.

The regional geology of the area is characterised by metasediments (pelitic gneiss, amphibolite, grey biotite gneiss, calc-silicate gneiss, marble and thin lenses of quartzite) of the Mokolian age. The system exhibits a complex geological history with the first economically significant occurrence of diamonds relating to palaeo-drainage evolving in the Early to Middle Cretaceous (120-100Ma). Re-use of these fluvial conduits has occurred during the Late Miocene (Proto deposits) and again in the Plio-Pleistocene and Quaternary eras (Meso deposits).

Outcrops occur only along the coast where exposure of metaquartzites of the Holgat formation intercalated with granite-gneiss of the Namaqualand Metamorphic complex is found. The remainder of the area is covered by Aeolian sand varying in thickness from <1m on the coastal plain to 30m eastward.

The coastal zone consists of a reasonably flat coastal plain, ranging from 3-5 km in width. Gneissic bedrock types of the Namaqualand Metamorphic Complex underlie and are exposed along the coastline. The regional gneisses differentiate locally into schists, quartzites, small pegmatites and minor ultramafic intrusive. These Precambrian rocks extend seaward to form a rugged inner shelf. Regional lineaments consist of tectonic joint systems, gneissic fabric, schistose foliation and minor intrusive dykes in all possible orientations, predominantly north-westward.

Exploration of marine alluvial diamonds both onshore and in the offshore environment shows that there are preferential localities in which marine sedimentary deposits have higher probabilities of containing diamonds. These include gullies, potholes and bed-rock depressions, all of which are associated with marine wave-cut terraces. Diamonds are generally found close to the bedrock and are deposited in high-energy environment sediments containing pebbles, cobbles and boulders.

These sediments commonly owe their existence to storm beach deposits along the base lines of low cliffs that back wave-cut terraces. Also, it is upon these surfaces that diamondiferous gravels have been concentrated and redistributed northward by wave and current action during sea-level still stands. Due to numerous sea-level fluctuations, particularly in the Quaternary, multiple terrace development during sequential periods of transgression and regression has resulted in modification of existing terraces and the disruption of the depositional pattern of marine diamonds.

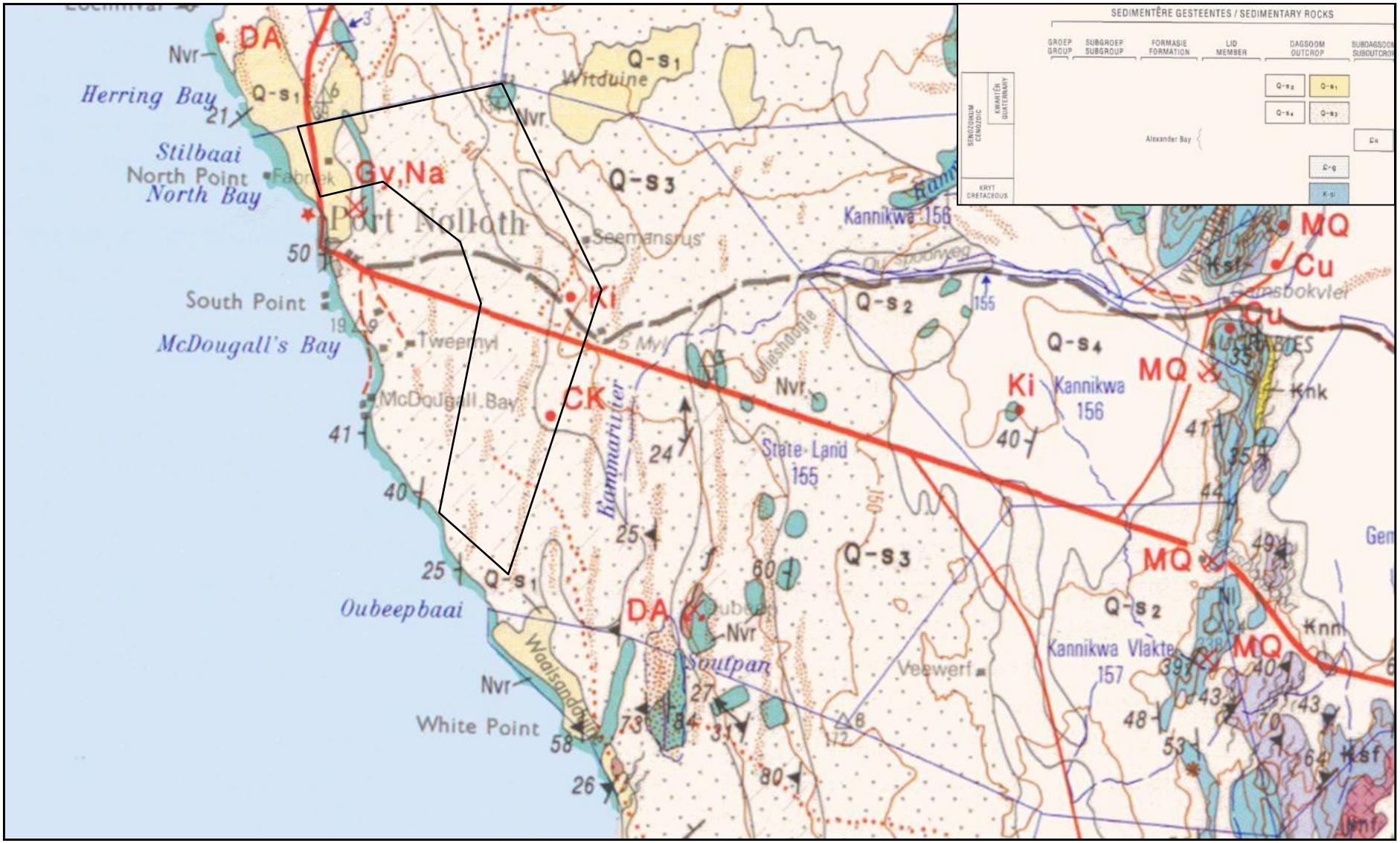


Figure 9: Geological Map (also included as Figure 3 above)

8.1.3 Landscape and Land Use

Refer to Figure 10, which shows the land-use as per the SANBI BGIS Map Viewer Database dated 2009 as mostly natural areas, with the water resources (salt pan and wetland depression) and degraded areas, with the town of Port Nolloth categorised as “urban built-up”. Further landscape descriptions provided by Mucina and Rutherford (2006) are included under the descriptions of the vegetation types in Section 8.1.6.

8.1.4 Slope

Refer to Figure 11 showing the 5m contours of the Prospecting Right area on the Google Earth™ image base layer to understand the topography and slope of the area and the most suitable location of particular prospecting activities in relation to these site characteristics. The area is relatively flat with dune formations creating relief in the landscape. The salt pan creates a natural depression. The processing plant will be located inside the existing historical excavation as shown in Photograph series 1.

8.1.5 Climate

The project site is located within the Succulent Karoo Biome (refer to Figure 12 & Figure 13) where the climate has epizodic drought periods (well below 100mm per year) of one or two years in succession. Along the Richtersveld coast, the lack of rainfall is partly compensated by more frequent coastal winter fog, and hot summers are accompanied by high evapotranspiration rates (Mucina and Rutherford; 2006). The climate is a hostile arid coast characterised by erratic rainfall, high solar irradiation and frequent desiccating winds with fog present in winter at night and in the early morning (Mucina and Rutherford; 2006).

Refer to the climatic charts included in Figure 12 below, for the average temperatures, rainfall and wind speed. Port Nolloth received good rainfall during 2020 with the records showing above 200mm recorded.

Photograph Series 1 (dated 14/12/2020): View looking north-west along an existing road, moving in a clockwise direction, ending in a north-easterly direction. This existing disturbed footprint from historical mining is the site earmarked for the mobile processing plant. The excavated area is currently used for the illegal dumping of waste. (Note: the horizon is flat - the photographs are not perfectly aligned)

Photograph 2: View north of the Salt Pan depression entrance with no vegetation and the landing strip for light aircraft visible directly down the middle of the photograph.

Photograph Series 3: View north looking over the dunes adjacent to the salt pan where prospecting pits are located outside the pan.

Photograph 4: Access road within the prospecting right area.

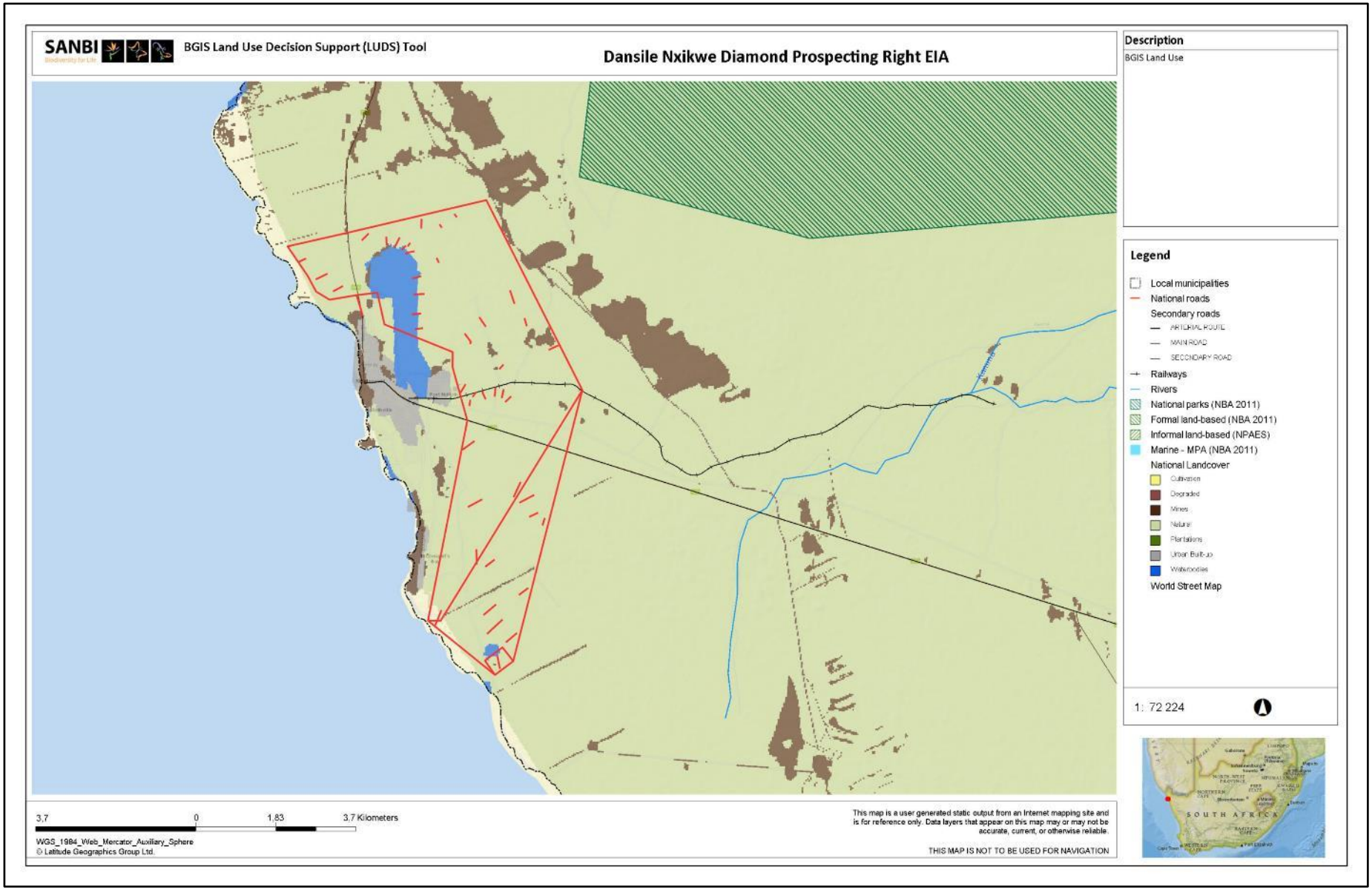


Figure 10: SANBI BGIS Land Use

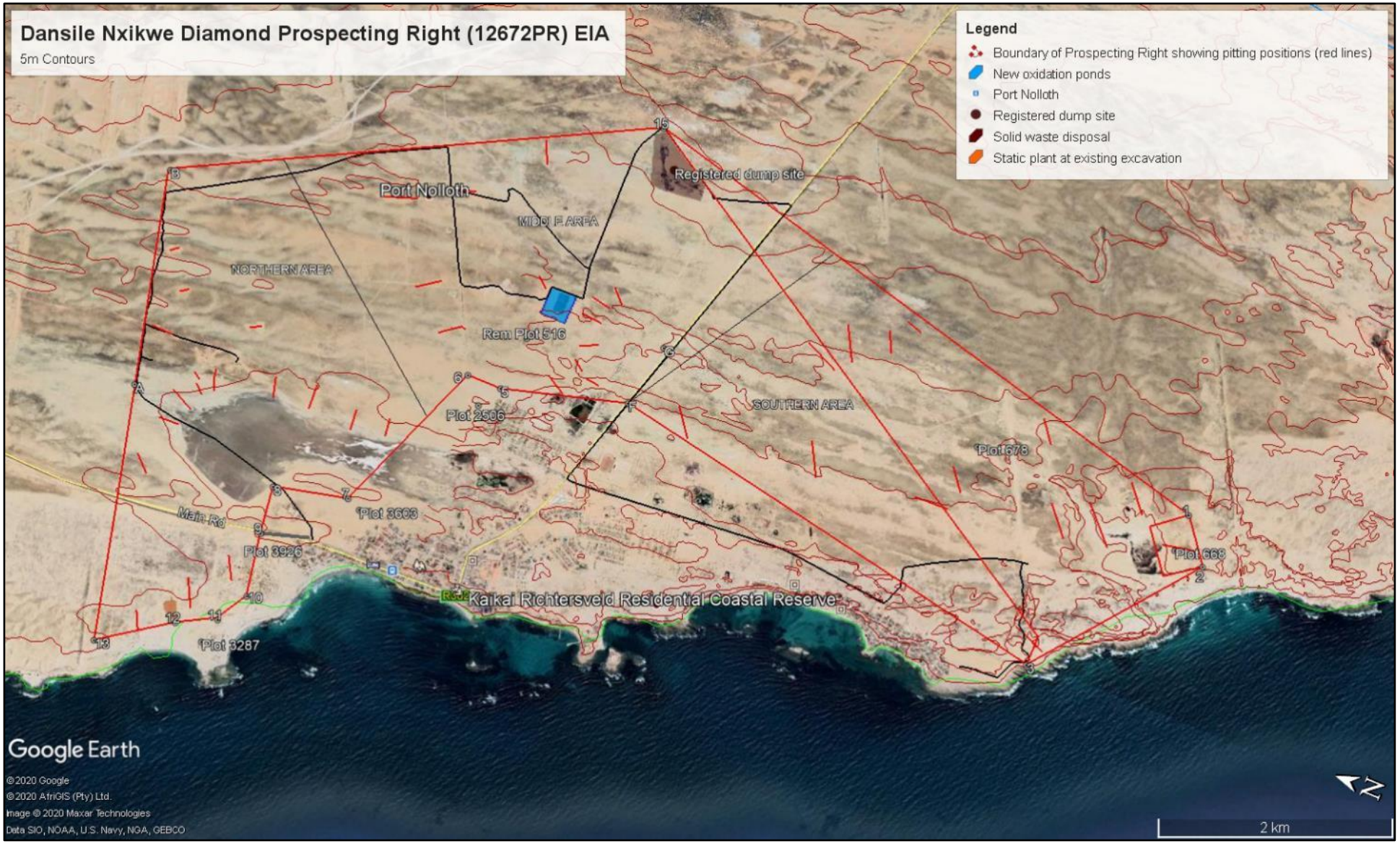
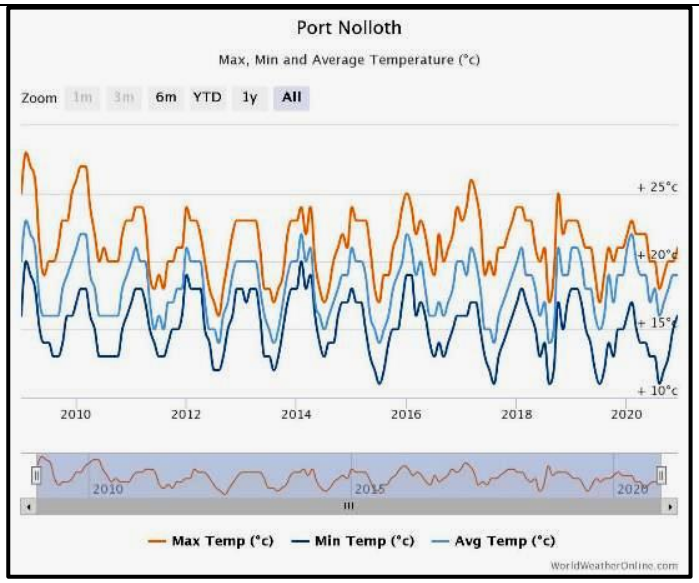
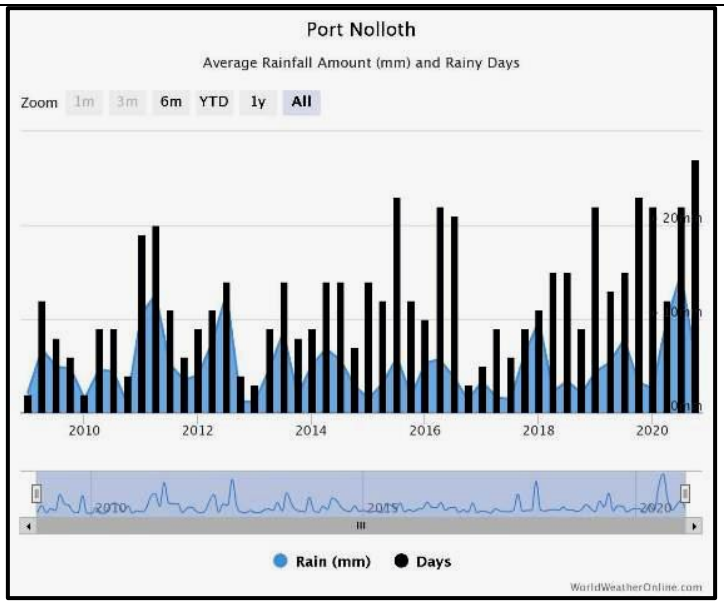


Figure 11: Slope showing 5m contours





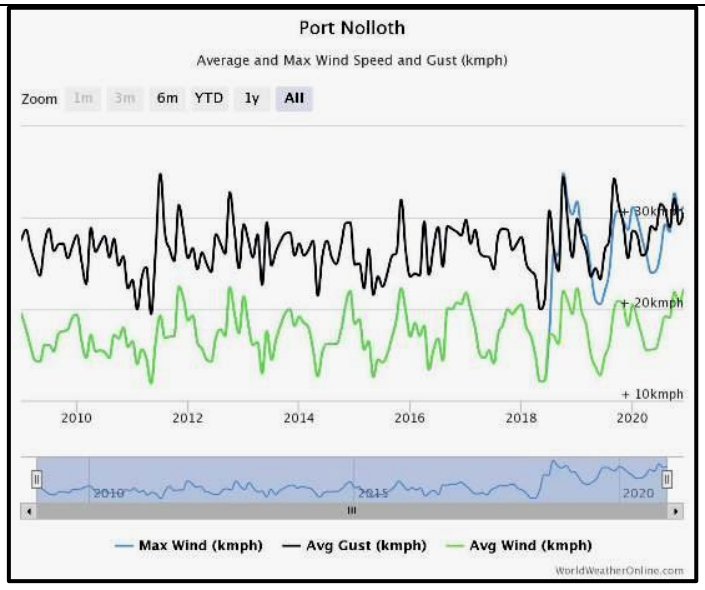


Figure 12: Climatic data for Port Nolloth (sourced from http://worldweatheronline.com)

8.1.6 Biomes and Vegetation

The Succulent Karoo, including desert, covers about 7.5% of South Africa (approximately 83 000 km2). This biome covers the arid western parts of South Africa, including Namaqualand and the Richtersveld as shown in Figure 13. The region is extremely dry in summer and the temperature often rises above 40°C. Rain falls in winter and varies from 20 to 290 mm per year.

The Succulent Karoo has the largest number of succulent plants in the world for a region of its size. Most of these plants have succulent leaves, and many are very tiny, like the stone plants. Plants in the Succulent Karoo are adapted to survive extremely dry summers. Succulent plants like small vygies and crassulas and the large Quiver Tree store water in their leaves and/or stems. Some trees have white bark to reflect heat. Annual daisies and geophytes remain dormant in summer and grow and flower after the winter rains. Many parts of the Succulent Karoo are famous for their spring flowers. Flower tourism is an important source of income.

The Succulent Karoo Ecosystem Programme (SKEP) has been developed to conserve this region. Refer to Figure 20, which shows the SKEP database for the prospecting area. The Prospecting Right application area is located within the SKEP Greater Richtersveld area (which includes the town of Port Nolloth) and includes the Gariep region, which has approximately 2700 plant species, 560 of which are endemic. Since 80% of the plant species are succulents, this is widely regarded as the area with the world's highest succulent diversity.

The vegetation types described below are illustrated in Figure 14 and Figure 15**.**

Namaqualand Salt Pans (AZi 2)

The vegetation and landscape feature exhibit flat surfaces of depressions, mostly without vegetation and only occasionally covered with sparse, highly salt-tolerant succulent shrubs (*Salsola Malephora*). The large depressions (pans) of marine (remnants of former larger marine transgression-forming coastal lagoons) with white to grey silt and seasonally moist clay soils. Namaqualand salt pans are nearly permanent dry with only seldom intermittent pools of standing water found in the lowest depressions. Along the Richtersveld coast, the lack of rainfall is partly compensated by more frequent coastal winter fog. Hot summers are accompanied by high evapotranspiration rates. The conservation status is described as Least Threatened by Mucina and Rutherford (2006), with none conserved in statutory conservation areas. Refer to Photograph 2 and Photograph Series 3.

Namaqualand Seashore Vegetation (AZd 2)

The vegetation and landscape features for this vegetation type are described by Munica and Rutherford (2006) as featuring slightly sloping beach, coastal rocky formations supporting sparse vegetation composed of (partly) succulent hummock-forming and spreading dwarf and herbs on the beach, in shell beds and on low dunes. Leaf succulent chenopod shrubs are dominant on coastal cliffs and shell beds. The climate is a hostile arid coast characterised by erratic rainfall, high solar irradiation and frequent desiccating winds. Fog is present in winter at night and in the early morning. Mucina and Rutherford (2006) report that none of this vegetation type is conserved in statutory conservation areas.

Richtersveld Coastal Duneveld SKs 1

The vegetation and landscape features for this vegetation type are described by Munica and Rutherford (2006) as being generally flat with some large, gently rolling hills, with relatively homogeneous vegetation covering fairly stable sand sheets. The depth of sand and soil crust define the character of habitat types. Wind-blown white sands of coastal origin overly rock belonging to the Holgat and Grootderm formation of the Gariep Supergroup. Especially around Port Nolloth, active dune fields can be found. The climate is characterised by extreme wind speeds and sand blasting from the south, with high storm frequency and winter rainfall predominant, and medium to a high frequency of sea fog. The conservation status is described as Least Threatened by Mucina and Rutherford (2006), with none conserved in statutory conservation areas. Refer to the Photograph series 1 to 4 that show various areas within the prospecting right area.

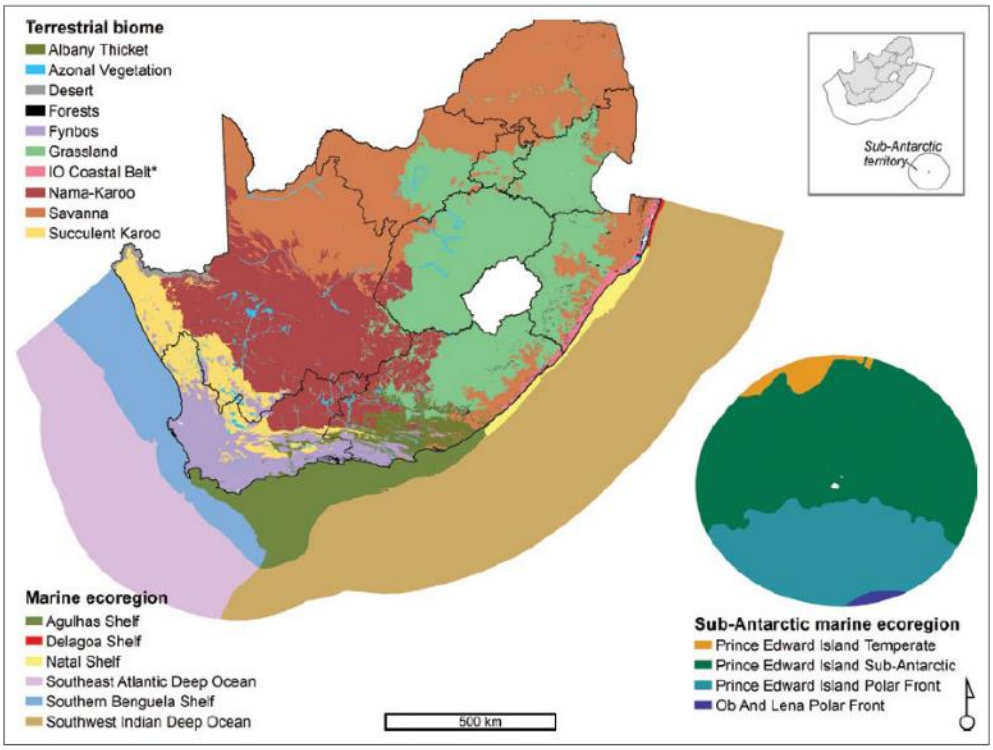


Figure 13: Overview of Terrestrial Biomes of South Africa indicating that the Succulent Karoo biome is of relevance to the project site located up the West Coast, close to the Namibian border. (Sourced from SANBI (2019); Figure 16)

8.1.7 Fauna

Endemism rates for invertebrates are high, and many unique and remarkable adaptive insects can be found in this region, including the scorpion, of which 22 are already known to be endemic to the Namakwa District Municipality. There is an abundance of reptiles and snakes in the region, many of which are near-endemic (including the Namaqua dwarf adder, which is the smallest of Africa's adders, measuring between 20-25 cm), as well as a few unique frogs such as the endemic rain frog, the marbled rubber frog and the paradise toad. Larger herbivores are absent due to the altered habitat and competitive land uses.

Refer to Figure 20**,** which shows the Succulent Karoo Ecosystem Programme (SKEP) database that has highlighted the fauna and flora found within the project boundary. The SKEP database identified an amphibian species within the project area. Most wild animals are small, like the Bat-Eared Fox, Suricate (Meerkat), Barking Gecko, birds and invertebrates. Many are nocturnal and hide in burrows in the ground during the day to avoid the hot, dry conditions.

According to the SANBI website[9], the SKEP Priority Regions are nine geographic priority areas in the Northern Cape area that were identified as the most efficient locations for achieving the conservation targets of SKEP. These geographic priority areas were refined based on their ability to contribute to the maintenance of Red Data List species and maintain important ecological processes, particularly in the face of climate change. The nine identified geographic priority areas have conservation value and are most vulnerable to increasing land-use pressures. In these priority areas, SKEP seeks to establish informal conservation networks that will achieve vegetation and process targets.

Avifauna species are mostly found in the southern section of the salt pan where there is a body of water observable from Google Earth over various timeframes, and which is located outside the Prospecting Right area.

[9] https://www.sanbi.org/biodiversity/science-into-policy-action/mainstreaming-biodiversity/succulent-karoo-programme-skep/the-skep-priority-regions/

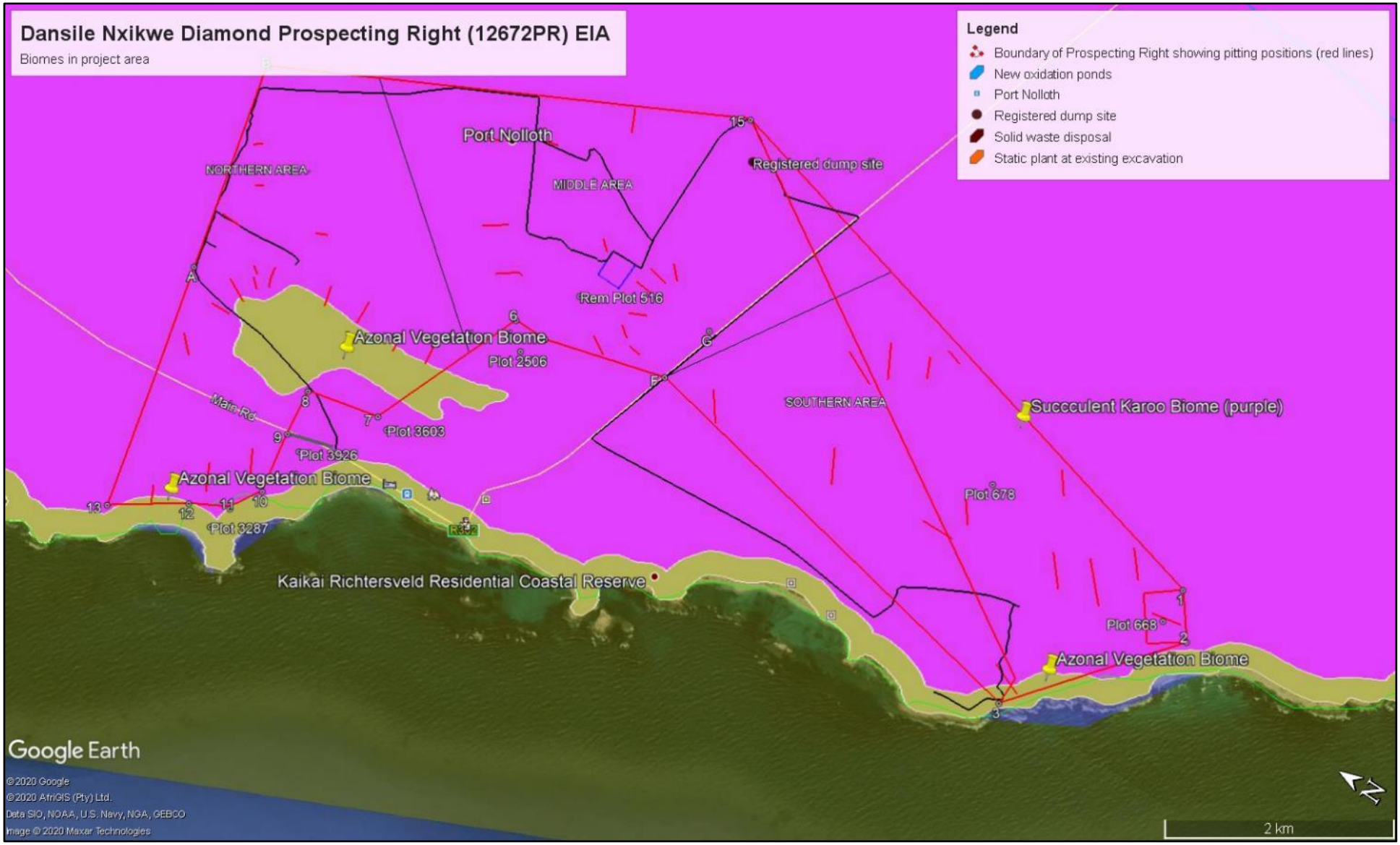


Figure 14: Biomes of the Prospecting Area

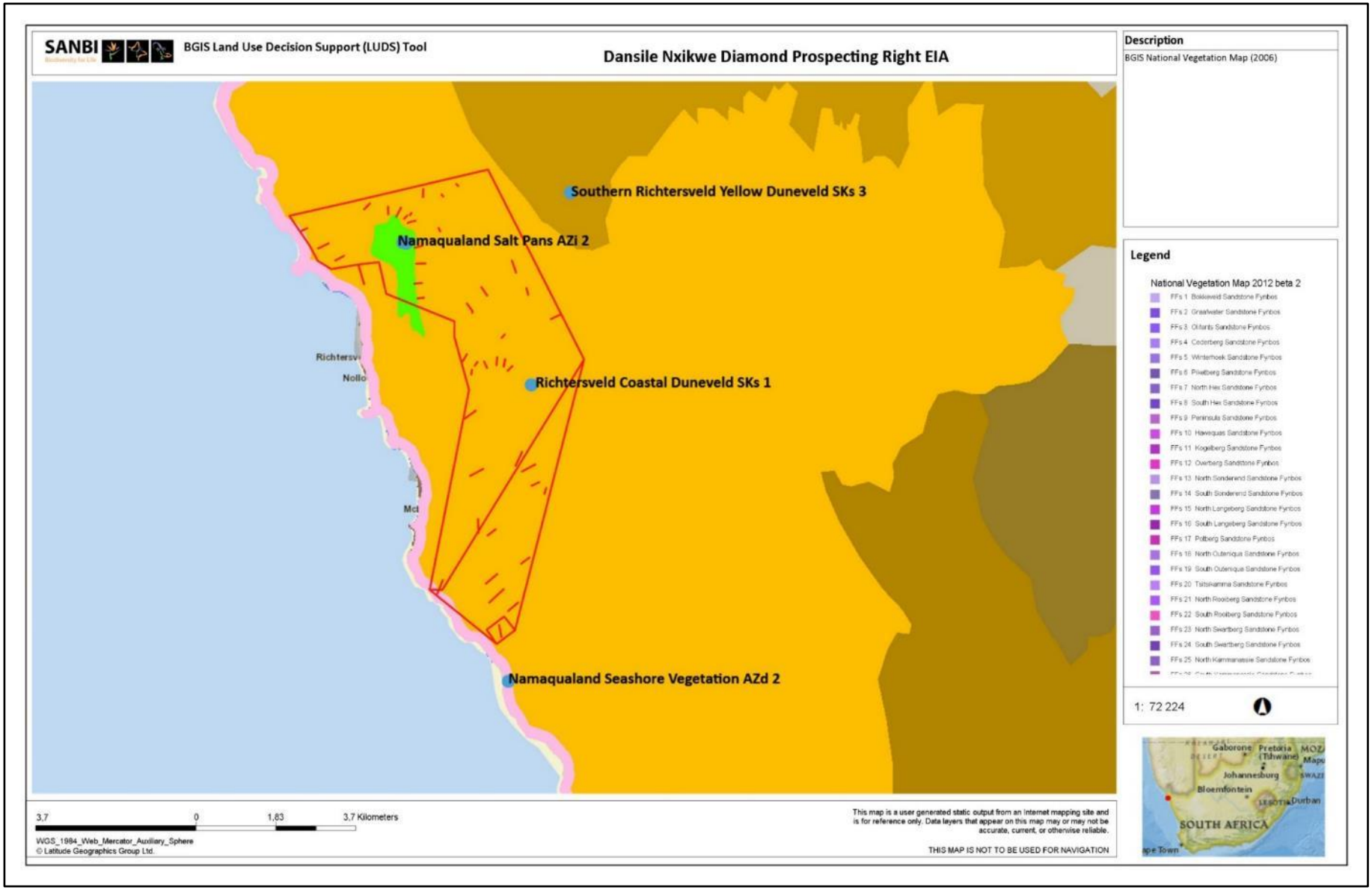


Figure 15: BGIS Vegetation Map

8.1.8 Water Resources

The project site is located within the Department of Human Settlements, Water and Sanitation's Lower Orange Water Management Area (14), and in Quaternary Catchment F20D. Precipitation is generally low occurring in the winter months with fog a common occurrence. Refer to the climatic information in Figure 12 above.

Surface water: Salt Pan and Valley Floor Depression Wetland

The SANBI BGIS water resources mapping indicates the salt pan and valley floor depression wetland, as shown in Figure 16. The salt pan is not a protected area. There are no River Freshwater Ecosystem Priority Area (FEPA)[10] sub-catchments within the prospecting area.

The category of both inland aquatic ecosystems is Category G, and confidence is Level 1[11]. This confidence level means that the desktop mapping of the extent of inland wetlands was done by non-wetland specialists. The Category refers to the level of fine-scale mapping of the wetland features with "A' representing fine-scale mapping with in-field verification.

Water Use license requirements

A Water Use License or General Authorisation in terms of Section 21 (c) and (i) of the NWA may be required should the bulk sampling show that the trenches will impact on the Salt Pan or wetland depression.

Groundwater

Reference is made to the CapeFarmMapper[12] database, which provides information on the depth of the groundwater and electrical conductivity as shown in Figure 17 and Figure 18 respectively.

The depth of the groundwater as shown in Figure 17, page 56 indicates that the groundwater is located between 31 and 40 metres below ground level (mbgl). The depth of the groundwater at the location of the processing plant and the area where the tailings storage will be located is given as approximately 34.59 mbgl. The pit and trench depths are given as 6.5m deep, and the excavated area is given as 5m deep, therefore there is very little likelihood of encountering groundwater at these depths.

The electrical conductivity of the groundwater occurring within the prospecting right area is mapped in Figure 18 as occurring between 370 and 520 mS/m. This means that the groundwater has a high concentration of inorganic salts in solution (often comprised of sodium, potassium, calcium and magnesium) indicating that the water quality is poor and unfit for use as drinking water and exceeds the wastewater general limits[13]:

- Drinking Water (SANS 241:2015): Conductivity at 25°C (mS / m) – ≤ 170 mS/m
- Wastewater General Limits: Electrical Conductivity (mS/m) – 70 mS m above intake to a maximum of 150 mS/m.

The aquifer classification is given as poor, with least aquifer susceptibility and least aquifer vulnerability as referenced from the CapeFarmMapper database (not mapped). The aquifer type and yield are given as "Fractured 0.0 – 0.1 l/s" with an annual recharge of 0.84mm in the location of the processing plant and tailings storage facility.

[10] FEPAs are strategic spatial priorities for conserving freshwater ecosystems and supporting sustainable use of water resources. FEPAs were determined through a process of systematic biodiversity planning and were identified using a range of criteria for conserving ecosystems and associated biodiversity of rivers, wetlands and estuaries. FEPA maps are suitable to use at a desktop level for planning and decision-making processes at the national or water management area level. In general, confidence in the FEPA maps at a national level is high but decreases at more local levels of planning.

[11] Van Deventer, H., Smith-Adao, L., Mbona, N., Petersen, C., Skowno, A., Collins, N.B., Grenfell, M., Job, N., Lötter, M., Ollis, D., Scherman, P., Sieben, E. & Snaddon, K. 2018. South African National Biodiversity Assessment 2018: Technical Report. Volume 2a: South African Inventory of Inland Aquatic Ecosystems (SAIIAE). Version 3, final released on 3 October 2019. Council for Scientific and Industrial Research (CSIR) and South African National Biodiversity Institute (SANBI): Pretoria, South Africa. Report Number: CSIR report number CSIR/NRE/ECOS/IR/2018/0001/A; SANBI report number http://hdl.handle.net/20.500.12143/5847

[12] https://gis.elsenburg.com/apps/cfm/

[13] https://selectech.co.za/learn-water-testing-electrical-conductivity/

8.1.9 Critical Biodiversity Areas

The latest conservation mapping for the Northern Cape is mapped in Figure 19 indicating that there are no areas of conservation significance within the prospecting area, including the salt pan.

Critical Biodiversity Areas (CBAs) are areas that are required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure. These include:

- All areas required to meet biodiversity pattern (e.g. species, ecosystems) targets;
- Critically Endangered (CR) ecosystems (terrestrial, wetland and river types);
- All areas required to meet ecological infrastructure targets, which are aimed at ensuring the continued existence and functioning of ecosystems and delivery of essential ecosystem services; and,
- Critical corridors to maintain landscape connectivity.

CBAs are areas of high biodiversity and ecological value and need to be kept in a natural or near-natural state, with no further loss of habitat or species. Degraded areas should be rehabilitated to natural or near-natural conditions. Only low-impact, biodiversity-sensitive land uses are appropriate. A distinction is made between CBAs that are likely to be in a natural condition (CBA 1) and those that are potentially degraded or represent secondary vegetation (CBA 2). This distinction is based on the best available land cover data.

Refer to Figure 19 below, which shows that the prospecting right area has sections demarcated in Category B (salt pan) and Category C The remaining area) in terms of the "Mining and Biodiversity Guidelines" categories referenced from the SANBI BGIS map viewer from 2013.

8.1.10 Richtersveld National Park (RNP) Buffer Zone

Refer to Figure 22, referenced from the Draft Richtersveld National Park Management Plan for the period 2018 – 2018 (RNPMP), which provides an indication of the Buffer Zone associated with the Richtersveld National Park, and the smaller National Park area located approximately 2.3km to the north-east of the Prospecting Right boundary.

The Draft RNPMP states that (section 2.14): "The Park itself is mainly surrounded by private livestock (mainly goats and sheep) farms that focus on meat production. The main economic sectors are mining, agriculture, fishing and tourism. The area along the Orange River as well as the stretch of coast between Alexander Bay and Port Nolloth is well known for its alluvial diamond deposits, which have attracted mining to the area. Although mining has the potential for considerable job opportunities, it could conflict with the park's conservation objectives due to the proximity of the prospecting/mining areas. The Richtersveld has the potential to become the destination of choice for tourists to the Northern Cape and South Africa. Currently, the tourism sector in the RLM contributes a small percentage to the economy of the area. The park plays a significant role as an economic contributor in the region."

Mining is listed as one of the threats to "1. Perennial near-pristine Gariep / Orange River and riparian vegetation in a desert, playing a key role supporting biodiversity and a range of economic activities", as per section 5.2.6 of the RNPMP in relation to water use and terrestrial impact.

According to the Draft RNPMP (section 6.7): "The buffer zone shows areas outside the park within which land-use changes can affect the park. The buffer zone in combination with guidelines will serve as a basis for: (i) identifying focus areas in which park management and scientists must respond to Environmental Impacts Assessment's (EIAs), (ii) helping to identify types of impacts that will be important at a particular site, and most importantly (iii) integrating long term protection of the park into the SDFs of municipalities and other local authorities. The park will interact with all spheres of government, whether local, provincial, or national, as required, to achieve a positive conservation outcome in the buffer zone. In terms of EIA responses, the buffer zone serves largely to raise red flags and does not remove the need for carefully considering the exact impact of a proposed development. In particular, it does not address activities with broad regional aesthetic or biodiversity impacts e.g. renewable energy development projects.

In the park's case, there are four categories within the park buffer zone, the priority natural area, catchment protection, and view shed protection area and critical biodiversity area and ecological support areas" (refer to Figure 22, which is Map 6 in the RNPMP.

The sections of the buffer zone categories that fall within the prospecting right boundary are shown in Figure 22(on image overlay on the kmz file of the prospecting right boundary and target areas). The following categories are of interest as they overlap with the prospecting right area as shown in Figure 23.

Critical Biodiversity Areas: Critical biodiversity areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological support areas are not only critical for meeting biodiversity targets but play a key role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services. Critical biodiversity areas and ecological support areas may be terrestrial or aquatic. The principal objective of critical biodiversity areas and ecological support areas is to guide decision-making about where best to locate development, informing land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity.

Priority Natural Areas: "This zone aims to ensure the long-term persistence of biodiversity, within and around the park, by identifying the key areas on which the long-term survival of the park depends. This includes areas important to both biodiversity patterns (especially reasonably intact high priority natural habitats) and processes (ecological linkages, catchments, intact hydrological systems, etc.). This does not imply any loss of existing rights (e.g. current agricultural activities or legal extractive biodiversity use such as fishing) but rather aims to ensure the park's survival in a living landscape.

Priority natural areas include areas identified for future park expansion as well as reasonably natural areas of high biodiversity value, which are critical for the long-term persistence of biodiversity within the park. These include adjacent natural areas (especially high priority habitats), which function as an ecologically integrated unit with the park, as well as areas critical for maintaining ecological links and connectivity with the broader landscape.

Development guidelines: Inappropriate developments and negative land-use changes (such as additional ploughing permits for natural veld, development beyond existing transformation footprints, urban expansion, intensification of land use through golf estates, etc.) must be opposed within this area. Developments with site-specific impacts (e.g. a lodge on a game farm) must be favourably viewed if they contribute to ensuring conservation-friendly land use within a broader area."

Guidelines applicable for the Catchment Protection Section will also apply to these areas. Development guidelines for catchment protection are: "Within these areas, inappropriate development such as dam construction, loss of riparian vegetation and excessive aquifer exploitation must be opposed. In addition, the control of alien vegetation, control of soil erosion, and appropriate land care (e.g. appropriate stocking rates) must be promoted."

Viewshed Protection Areas: "These are areas where developments can impact on the aesthetic quality of a visitor's experience in a park. This zone is particularly concerned with visual impacts (both day and night), but can also include sound pollution. Development guidelines: Within these areas, any development proposals must be carefully screened to ensure that they do not impact excessively on the aesthetics of the park. The areas identified are only broadly indicative of sensitive areas, as at a fine-scale many areas within this zone will be perfectly suited for development. Further, invasive developments outside this zone will also have to be considered.**"**

8.1.11 Screening Tool Report and Site Sensitivity Verification Report

Refer to the combined Screening Tool Reports, and Site Sensitivity Verification Report attached at **Appendix C, page 140**. The following sensitivities were provided in the Screening Reports for each property as listed below:

Plot 668:

- Terrestrial Biodiversity & Aquatic: Very High Sensitivity
- Animal Species Theme & Civil Aviation: High Sensitivity
- Agriculture; and Plant Species: Medium
- Archaeological and cultural; Defence; Palaeontology: Low

Plot 678:

- Terrestrial Biodiversity & Aquatic: Very High Sensitivity
- Animal Species Theme & Civil Aviation: High Sensitivity
- Agriculture; and Plant Species: Medium
- Agriculture; Archaeological and cultural; Defence; Palaeontology: Low

Erf 3359 (northern coastal erf):

- Terrestrial Biodiversity: Very High Sensitivity;
- Animal Species Theme & Civil Aviation: High Sensitivity
- Agriculture; and Plant Species: Medium
- Aquatic; Archaeological and cultural; Defence; Palaeontology: Low

Plot 516 (northern section could not select the property as there the polygon was open and the system could not provide the information, as shown on the "screen shot" included at the end of the Screening Reports attached at **Appendix C, page 140**). However, the adjacent sensitives are included in the adjacent Erf 3359 and Plot 678 Screening Tool Reports as included below:

- Terrestrial Biodiversity & Aquatic (Salt Pan) and Depression Wetland: Very High Sensitivity
- Animal Species Theme & Civil Aviation: High Sensitivity
- Agriculture; and Plant Species: Medium
- Agriculture; Archaeological and cultural; Defence; Palaeontology: Low

Summary

The prospecting pits and trenches will be isolated areas of disturbance and of short-term duration that will not result in the creation of linear barriers of great length and width preventing species mobility between habitats over a long period of time.

The following specialist assessments were identified during the Scoping Phase:

1. Terrestrial Biodiversity, Animal and Plant Compliance Statement/s to ensure compliance with the "Protocols" (refer to Table 6 above).
    a. There is a deviation from the Plan of Study for EIA regarding the inclusion of a Compliance Statement as identified in the Site Sensitivity Verification Report. The need for a biodiversity assessment will be addressed during the Mining Right Application process to follow the prospecting phase, should the mineral resource prove viable.
    b. The biodiversity specialist was unable to meet the stipulated deadline despite taking 3 months, which included waiting for the rainfall season to commence. The specialist comment is therefore not included in this DEIR.
2. Heritage Impact Assessment, including comment on the palaeontology, is required to ensure compliance with the National Heritage Act (Act 25 of 1999), as attached in Appendix D

No further investigation is considered necessary for the following sensitivities:

1. Aquatic Biodiversity; no aquatic resources will impact on.
2. Agriculture: Commercial activities are focused on fishing and diamond mining, including off-shore dredging. No livestock was observed grazing within the prospecting area.
3. Civil aviation: The prospecting activity will have no impact on the movement of aircraft over the prospecting area.
4. Defence: The prospecting activity will have no impact on the defence category.

Table 8: Summary of Recommendations based on Site Sensitivity Verification.

SENSITIVITY BASED ON SCREENING TOOL DATABASE	FINDINGS OF SITE SENSITIVITY VERIFICATION REPORT & COMMENT ON SPECIALIST INPUT
Terrestrial Biodiversity	Rated as LOW by the EAP: • There is no CBA conservation status applicable to the prospecting site based on the most recent Northern Cape conservation database. • There is a deviation from the Plan of Study for EIA regarding the inclusion of a Compliance Statement as identified in the Site Sensitivity Verification Report. The need for a biodiversity assessment will be addressed during the Mining Right Application process to follow the prospecting phase, should the mineral resource prove viable. • The biodiversity specialist was unable to meet the stipulated deadline despite taking a period of 3 months, which included waiting for the rainfall season to commence. The specialist comment is therefore not included in this DEIR.
Aquatic Biodiversity	Rated as NOT APPLICABLE by the EAP: • No aquatic habitat to be impacted on, therefore no further investigation is considered necessary.
Terrestrial Animal Species	Rated as MEDIUM by the EAP: • There is a deviation from the Plan of Study for EIA regarding the inclusion of a Compliance Statement as identified in the Site Sensitivity Verification Report. The need for a biodiversity assessment will be addressed during the Mining Right Application process to follow the prospecting phase, should the mineral resource prove viable. • The biodiversity specialist was unable to meet the stipulated deadline despite taking a period of 3 months, which included waiting for the rainfall season to commence. The specialist comment is therefore not included in this DEIR.
Civil Aviation	Rated as NOT APPLICABLE by the EAP: • Not relevant to prospecting.
Terrestrial Plant Species	Rated as MEDIUM by the EAP: • There is a deviation from the Plan of Study for EIA regarding the inclusion of a Compliance Statement as identified in the Site Sensitivity Verification Report. The need for a biodiversity assessment will be addressed during the Mining Right Application process to follow the prospecting phase, should the mineral resource prove viable. • The biodiversity specialist was unable to meet the stipulated deadline despite taking a period of 3 months, which included waiting for the rainfall season to commence. The specialist comment is therefore not included in this DEIR.
Agriculture	Rated as NOT APPLICABLE by the EAP: • No crop production or livestock grazing is evident. No further agricultural assessment is required.
Archaeological and cultural, and Palaeontology	The rating remains as LOW: • Heritage Impact Assessment (HIA) is required in terms of the National Heritage Act (Act 25 of 1999), to include palaeontological assessment. Refer to Appendix D, page 199
Defence	Rated as NOT APPLICABLE by the EAP: • No further investigation is required.

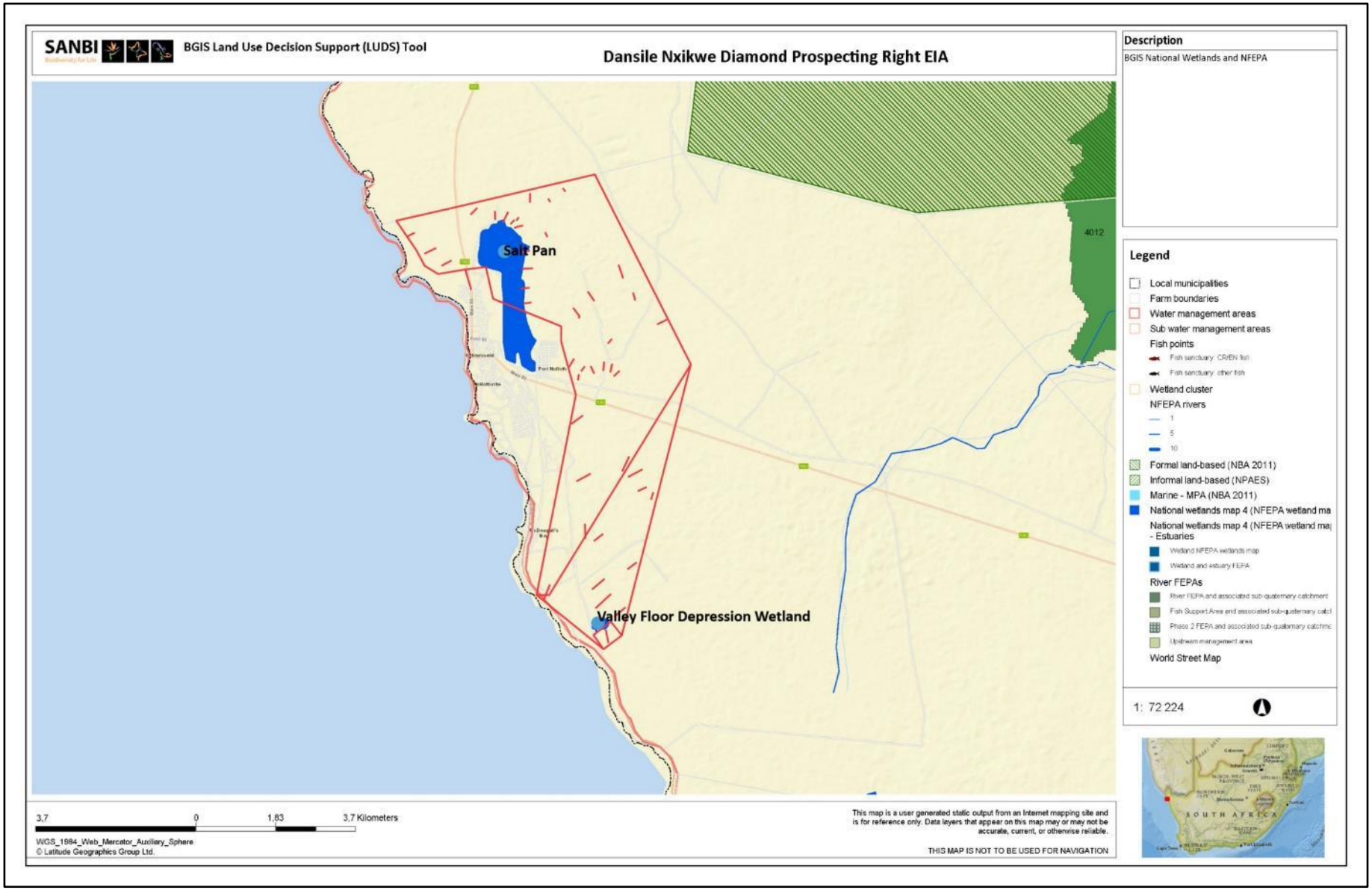


Figure 16: BGIS National Wetlands & NFEPA Map (BGIS MAP VIEWER 2020)

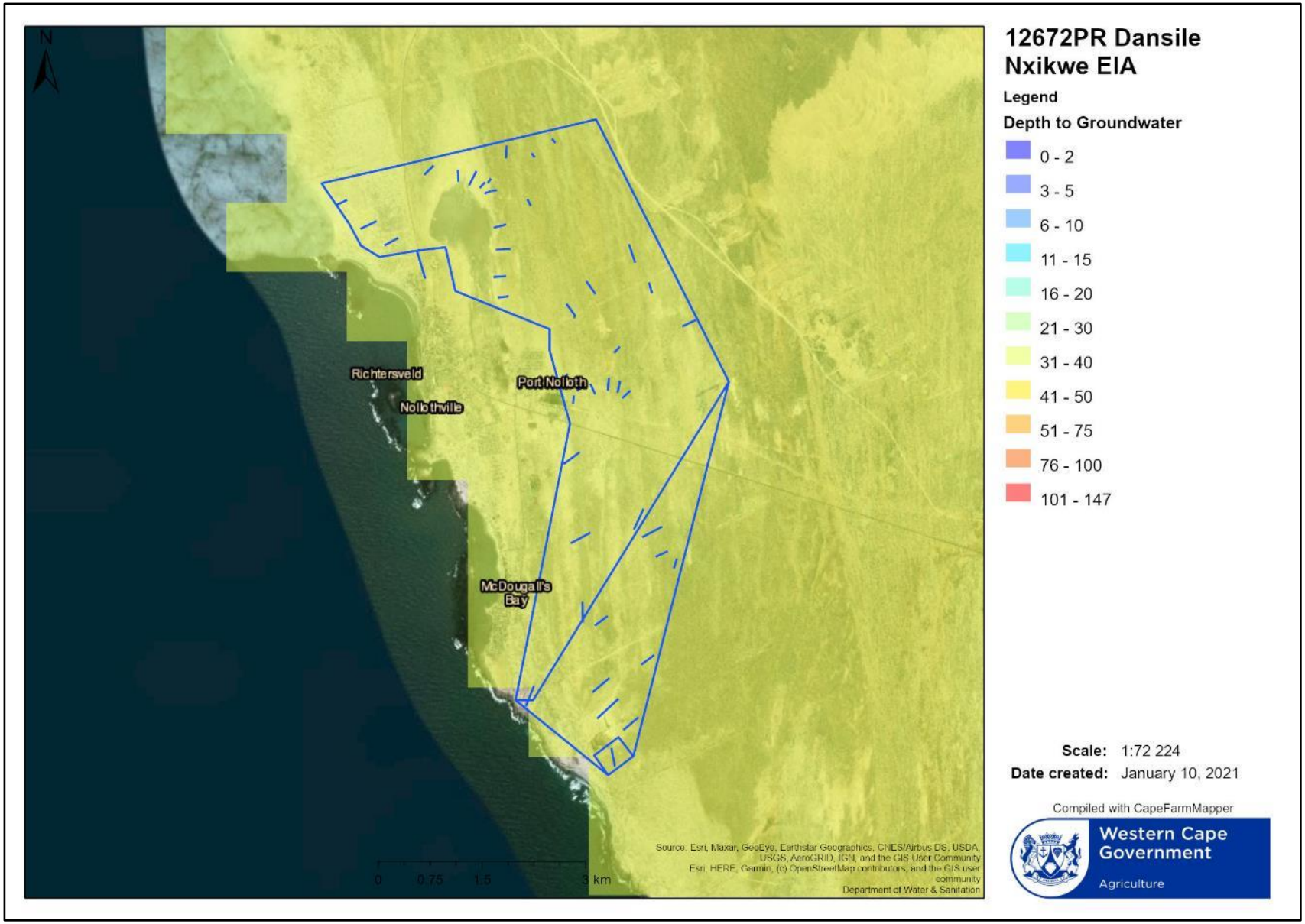


Figure 17: Depth of groundwater based on CapeFarmMapper database.

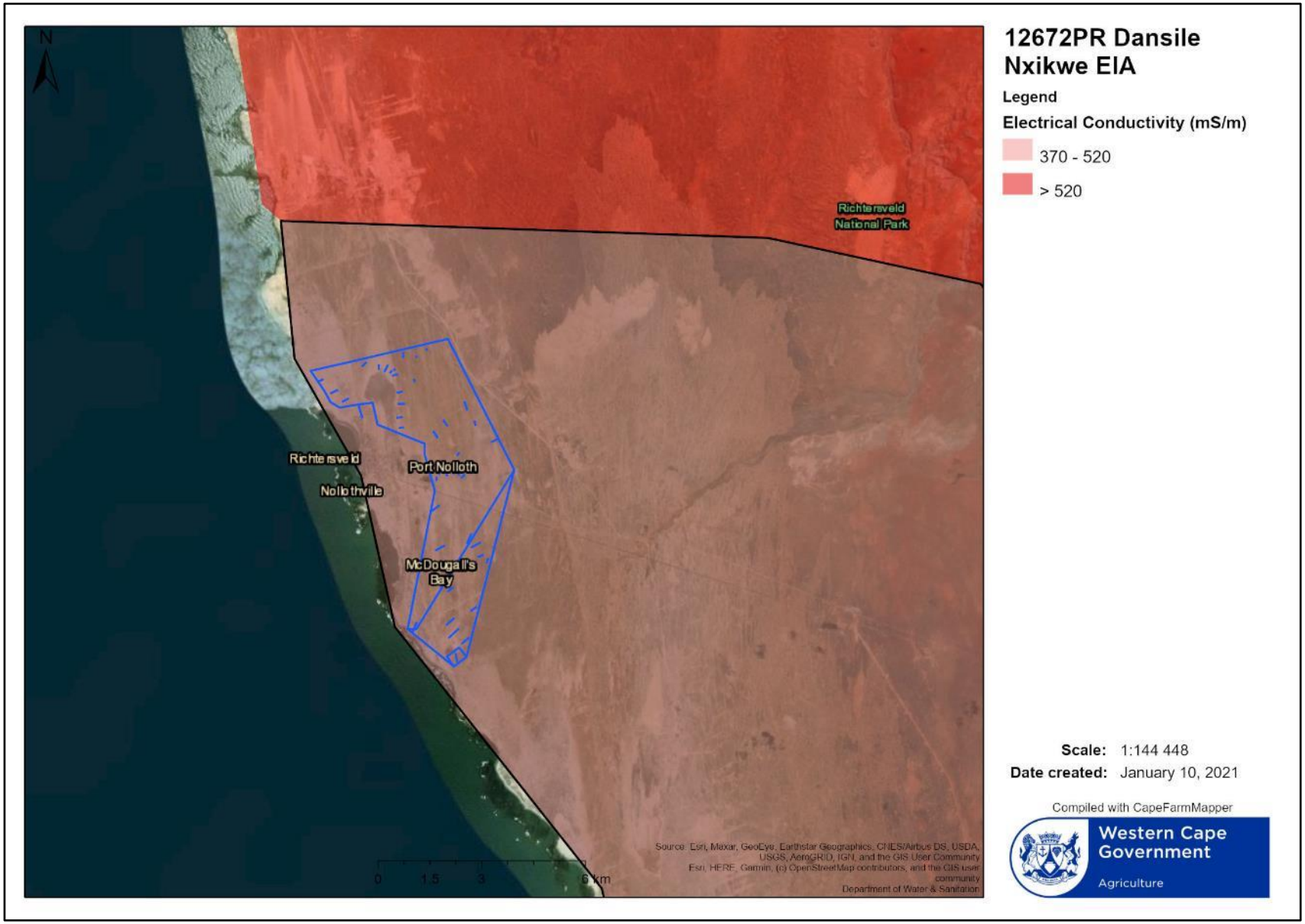


Figure 18: Groundwater quality based on CapeFarmMapper database.

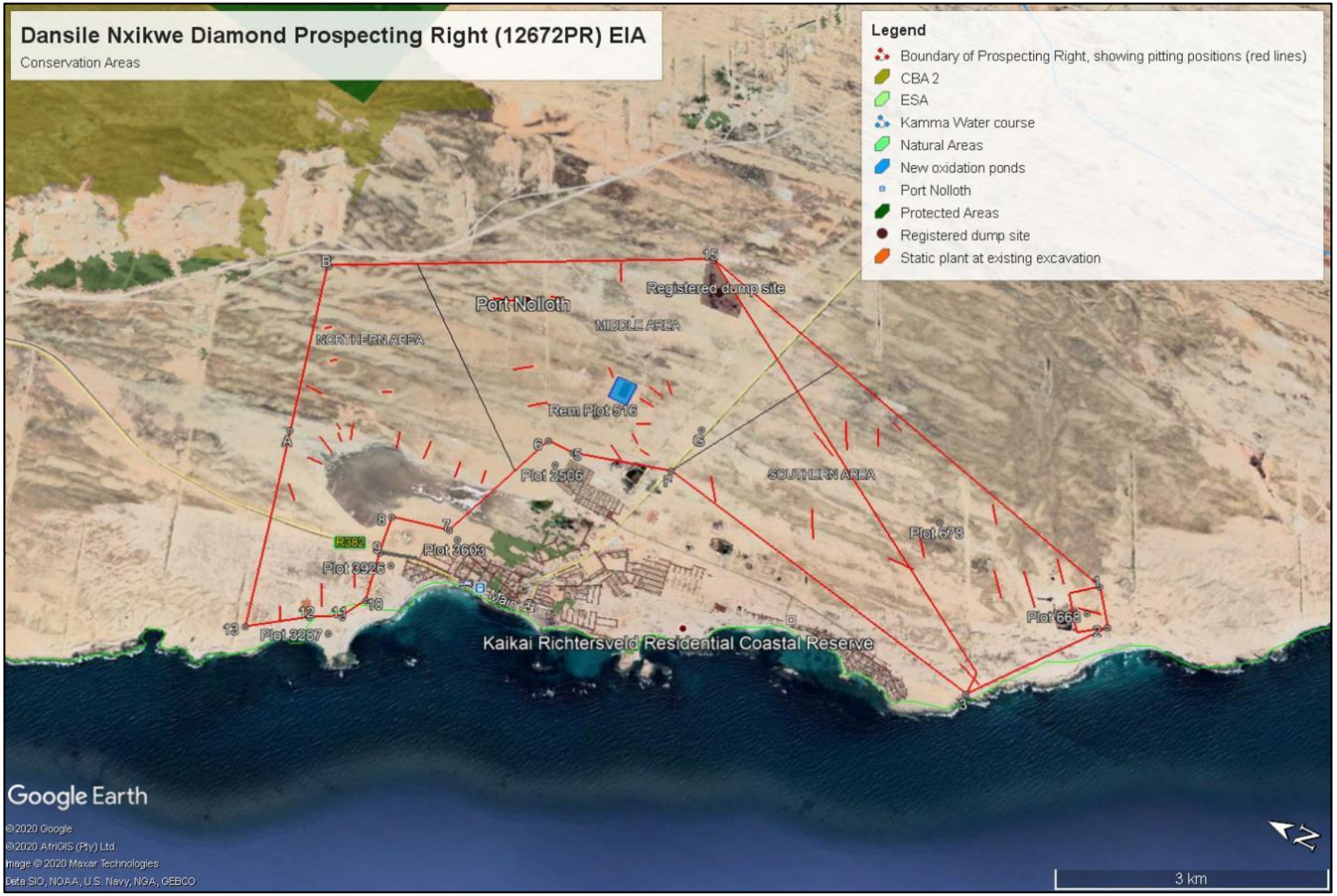


Figure 19: Critical Biodiversity Areas Map of the Prospecting License Area

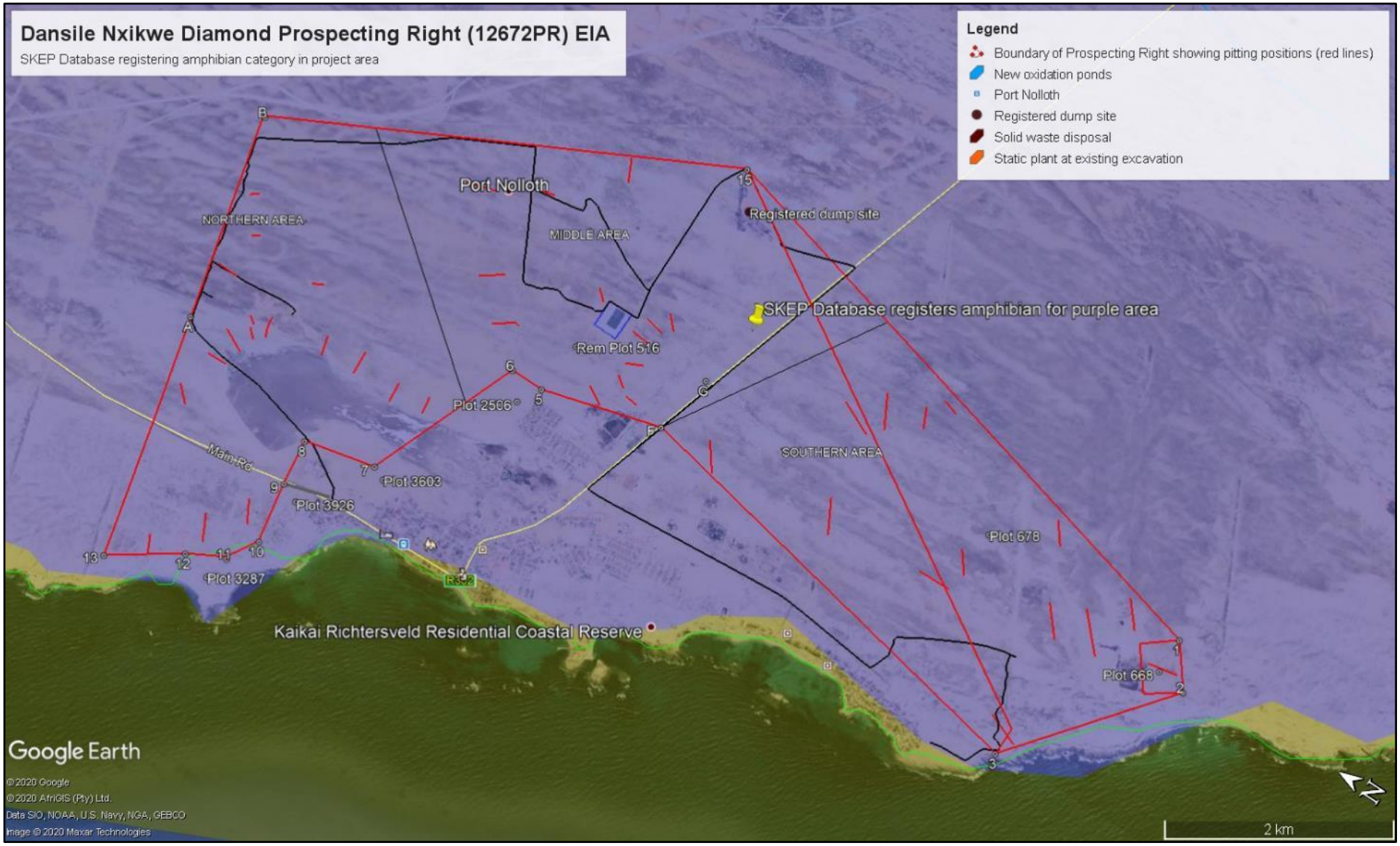


Figure 20: SKEP Fauna and Flora Biodiversity Map

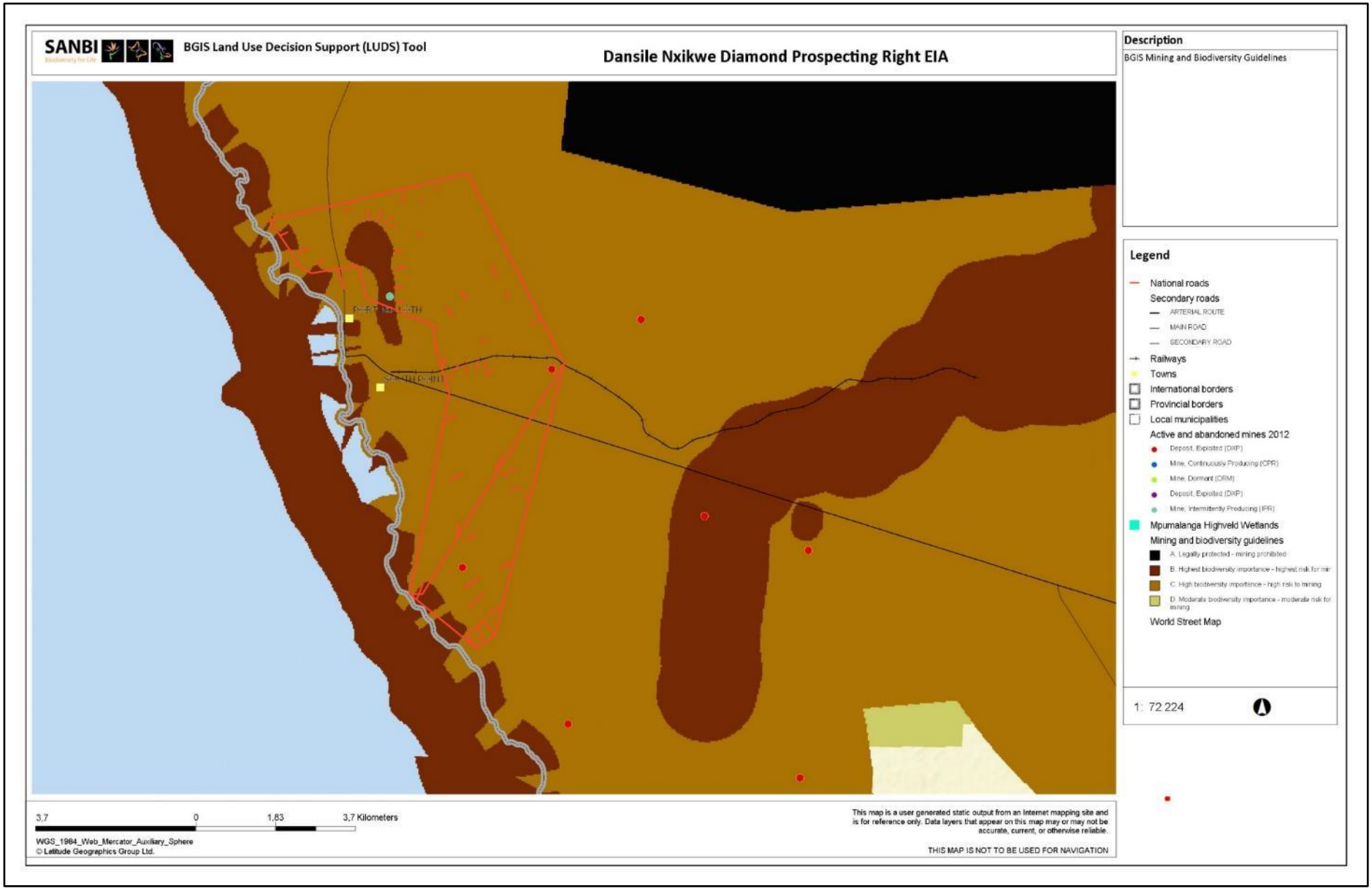


Figure 21: Location of Mining Area in terms of the "Mining and Biodiversity Guidelines" (BGIS MAP VIEWER)

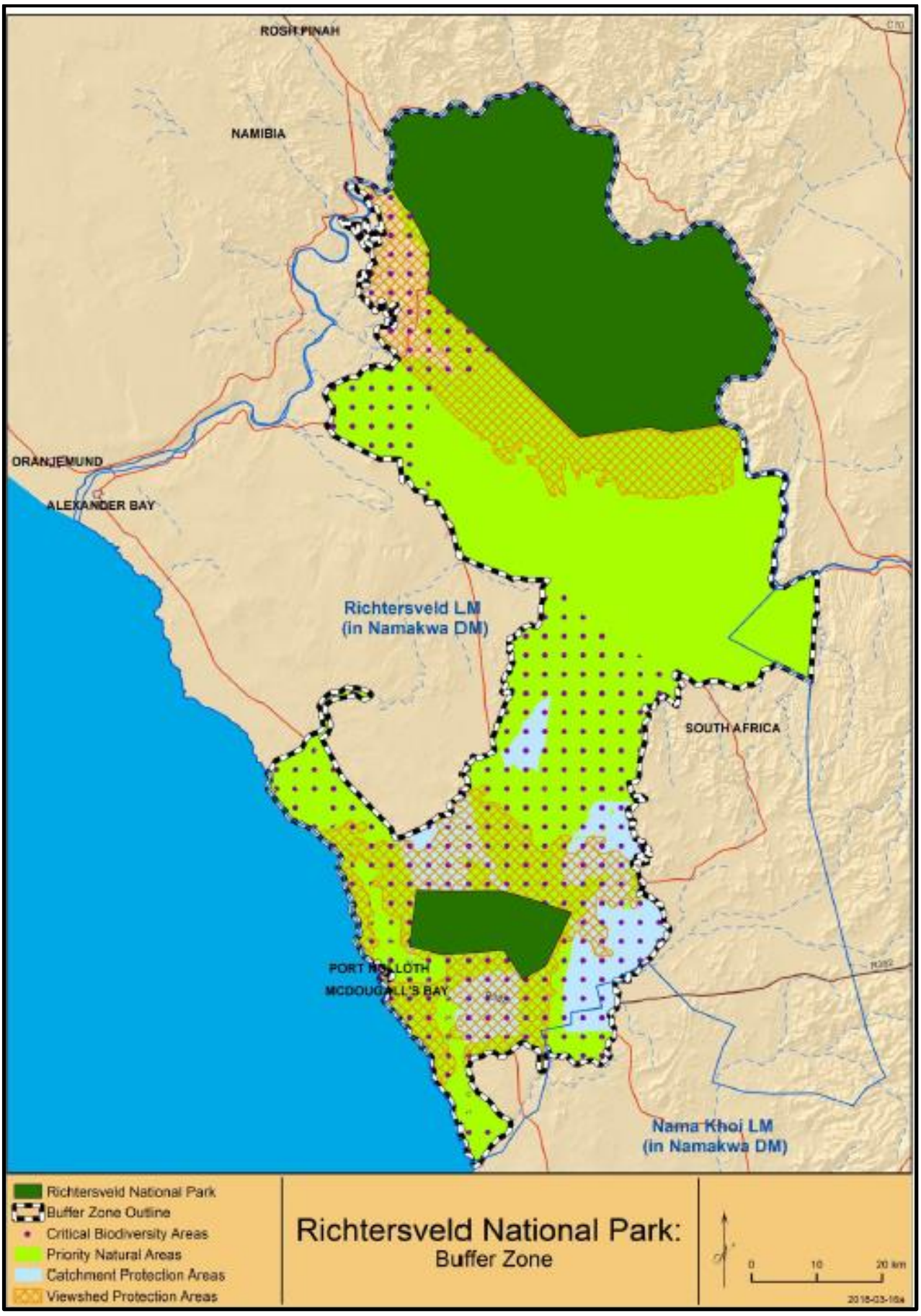


Figure 22: Richtersveld National Park Buffer Zone (referenced from the RN Park Management Plan – Map 6)

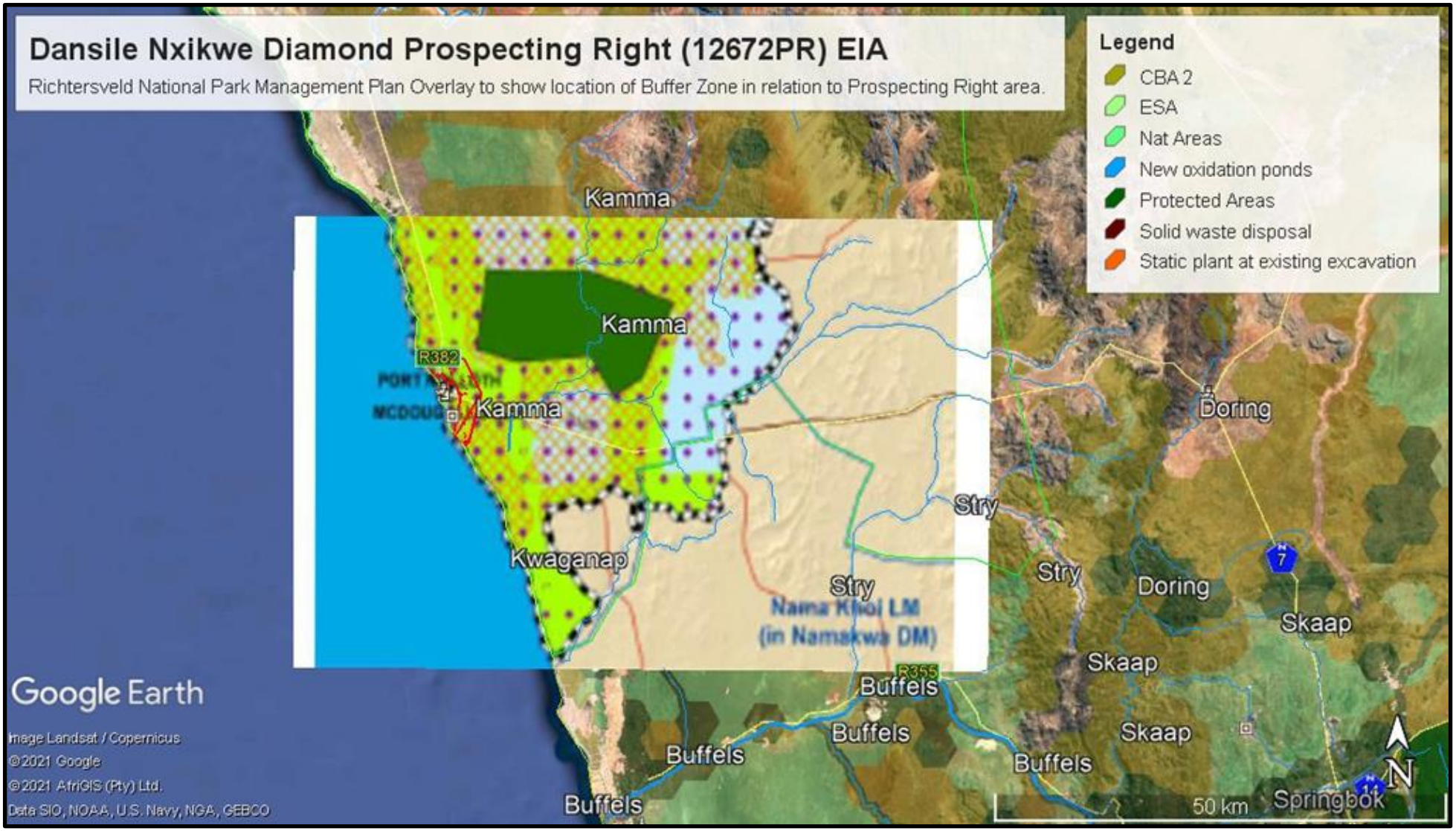


Figure 23: Richtersveld National Park Management Plan Overlay to show the location of Buffer Zone in relation to Prospecting Right. Compare to the map of the conservation areas shown in Figure 16, which does not correlate to RN Buffer Zone overlay.

8.1.12 Emissions

Air Quality

- Dust is generated by the wind blowing over un-vegetated or denuded areas and given the surrounding extent of the semi-desert environment, dust generation will occur under windy conditions. Climate change is predicted to impact on Southern Africa with an increase in temperatures and lower rainfall, which will impact on vegetation cover increasing soil mobility resulting in wind-blown soil erosion.
- Dust is generated off un-surfaced roadways when vehicles transport materials on-site and in off-loading materials to the ROM stockpile.

Noise and vibration

- The haul trucks will generate noise and vibration on the haul roads during normal working hours, excluding weekends.
- The operational and processing activities will generate some noise.

Light Pollution

- The processing plant will have lighting for security purposes.

8.1.13 Socio-economic characteristics

Approximately 90% of the region is used for livestock grazing and production, with the remainder comprising of agriculture and urban development. Tourism is a seasonal but rapidly growing feature with visitors to the region arriving almost exclusively between July and October to take in the world-renowned yearly flower display. The project site falls within the Namakwa District Municipality and the Local Municipality (LM) of Richtersveld. The socio-economic profiles are referenced from IDPs and included below.

The **Namakwa District Municipality** is sparsely populated, with a population of 115 842 and is the least populated district in the Northern Cape Province (and Country, although geographically the largest) with a population comprising 10.11% of the Province's total population.

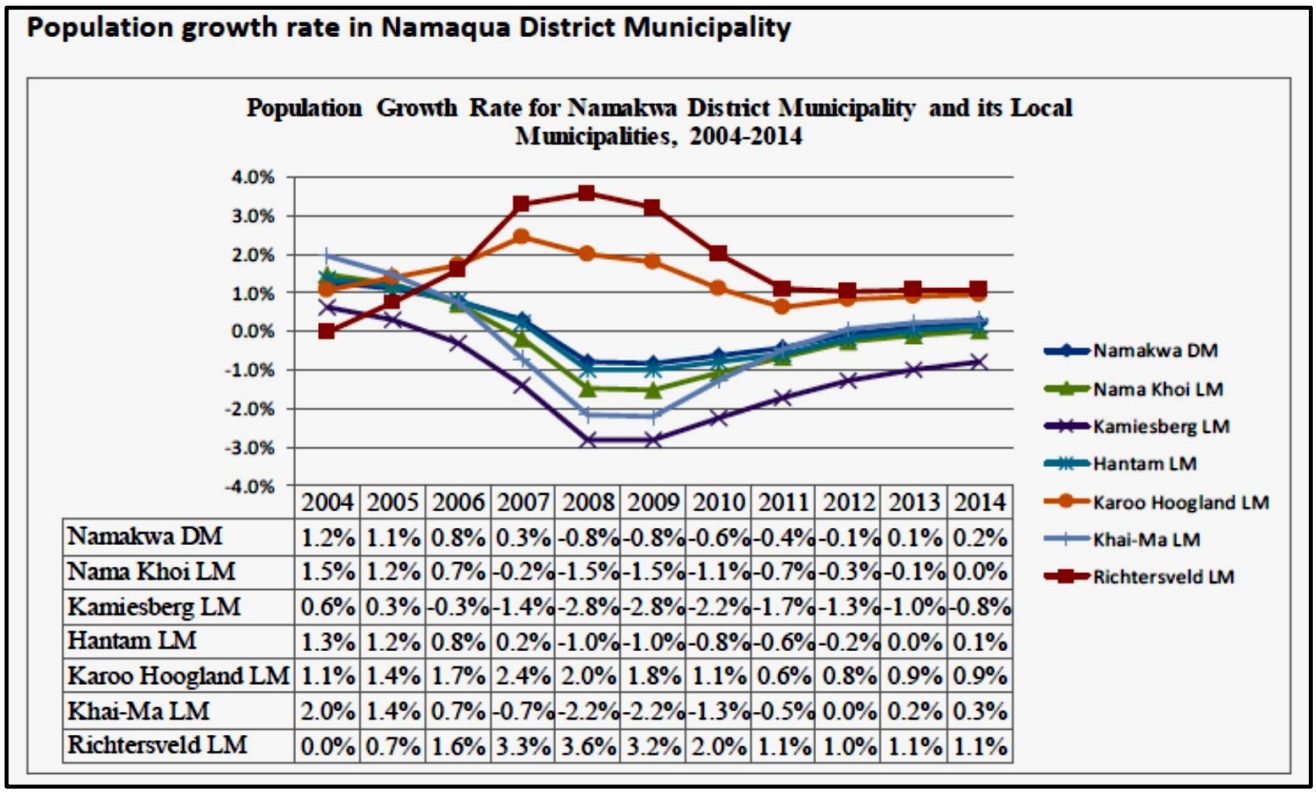
- The average growth rate for GGP in the area from 1996-2011 was 5.4 % and in 2007-2011 this slowed down slightly to an average growth rate of 4.8%.
- The largest contributing sector to employment in the local economy (21.12% of total employment in the formal sector) is the retail, catering and accommodation sectors.

The **Richtersveld Local Municipality** is located within an area of world-class biodiversity and of a unique conservation value. For this reason, Richtersveld Municipality made sustainable development as one of their key objectives and with nature reserves in each town, and the LM supports all conservancies, conservation and greening strategies. The Richtersveld Municipality, therefore, promotes sustainable development: sustainable use of resources, sustainable transport, energy efficiency, recycling, sustainable use of water resources, the use of renewable energy and other environmentally friendly practices, and forms part of the Working for Coast Programme.

Port Nolloth is the main economic centre of the Richtersveld Local Municipality and is also the town where the head office of the Richtersveld Municipality is situated. Richtersveld Municipality had a total population of 11982 in 2011. Similar to other rural municipalities, Richtersveld Municipality has also experienced common challenges such as skew patterns of wealth distribution, relatively high levels of unemployment and crime. The recent mine closure of Transhex Operations in Ward 2 has negatively impacted on the economic activities and income of people. The Richtersveld IDP (2020/2021) lists the Municipality's services rendered, which includes the salt pan used as a landing strip for light aircraft.

The total population in Richtersveld Municipality is 12487 (Richtersveld Municipality Final IDP; 2020/2021). The population growth rate of the Richtersveld Local Municipality located within the Namakwa District shows a decrease in growth rate from 3.5% in 2008 to 1% in 2014, as illustrated in Figure 24 below (sourced from the Nama Khoi Draft IDP 2018 2019).

The Prospecting Right area falls within Ward 3 and Ward 4 of the Richtersveld LM.



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Namakwa DM	1.2%	1.1%	0.8%	0.3%	-0.8%	-0.8%	-0.6%	-0.4%	-0.1%	0.1%	0.2%
Nama Khoi LM	1.5%	1.2%	0.7%	-0.2%	-1.5%	-1.5%	-1.1%	-0.7%	-0.3%	-0.1%	0.0%
Kamiesberg LM	0.6%	0.3%	-0.3%	-1.4%	-2.8%	-2.8%	-2.2%	-1.7%	-1.3%	-1.0%	-0.8%
Hantam LM	1.3%	1.2%	0.8%	0.2%	-1.0%	-1.0%	-0.8%	-0.6%	-0.2%	0.0%	0.1%
Karoo Hoogland LM	1.1%	1.4%	1.7%	2.4%	2.0%	1.8%	1.1%	0.6%	0.8%	0.9%	0.9%
Khai-Ma LM	2.0%	1.4%	0.7%	-0.7%	-2.2%	-2.2%	-1.3%	-0.5%	0.0%	0.2%	0.3%
Richtersveld LM	0.0%	0.7%	1.6%	3.3%	3.6%	3.2%	2.0%	1.1%	1.0%	1.1%	1.1%

Figure 24: Population growth rate in the Namaqua District Municipality (Source: Nama Khoi Draft IDP 2018 2019)

In 2014 the Richtersveld LM contributed to mining, finance and trade in terms of employment, as shown in Figure 25 below.

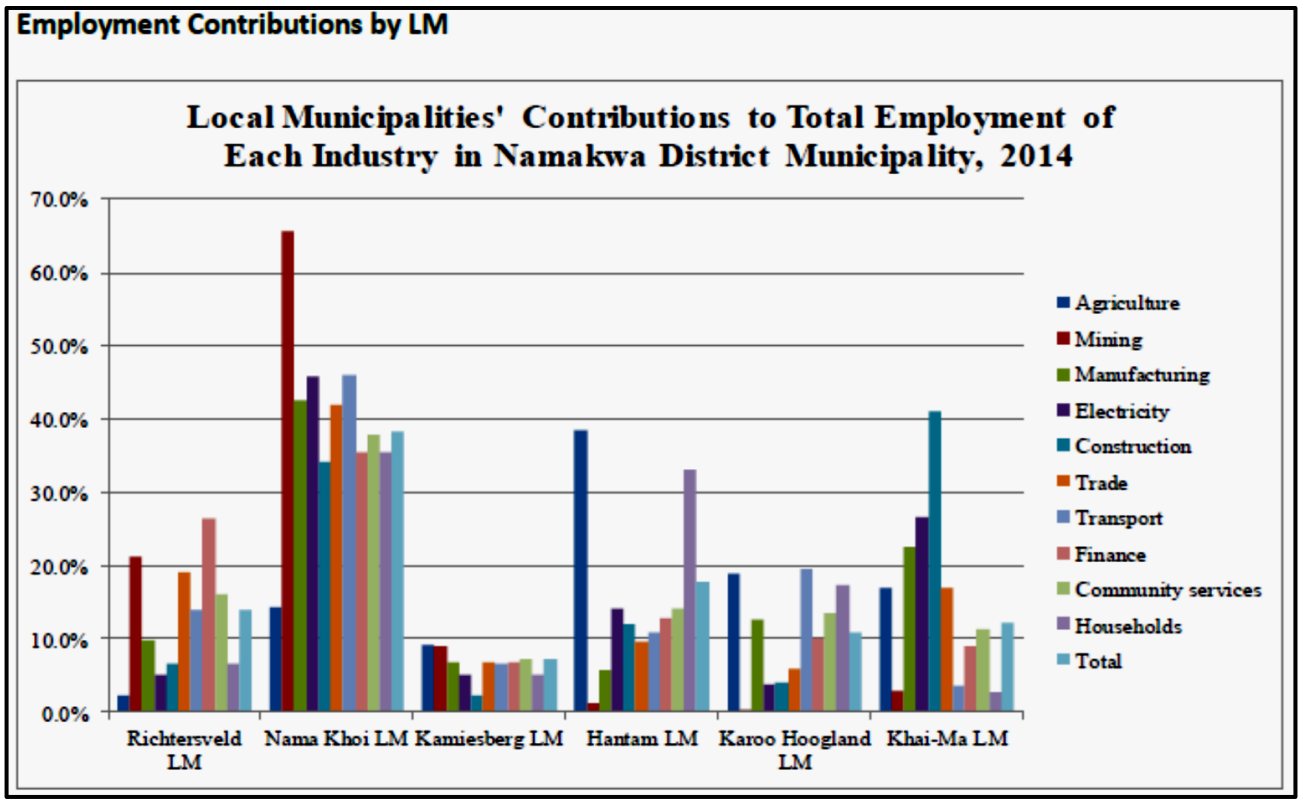


Figure 25: Employment Contributions by Local Municipality (Source: Nama Khoi Draft IDP 2018 2019)

Mining, community services and trade were the largest employing industry in 2014 in the Richtersveld Local Municipality as illustrated in Figure 26 below.

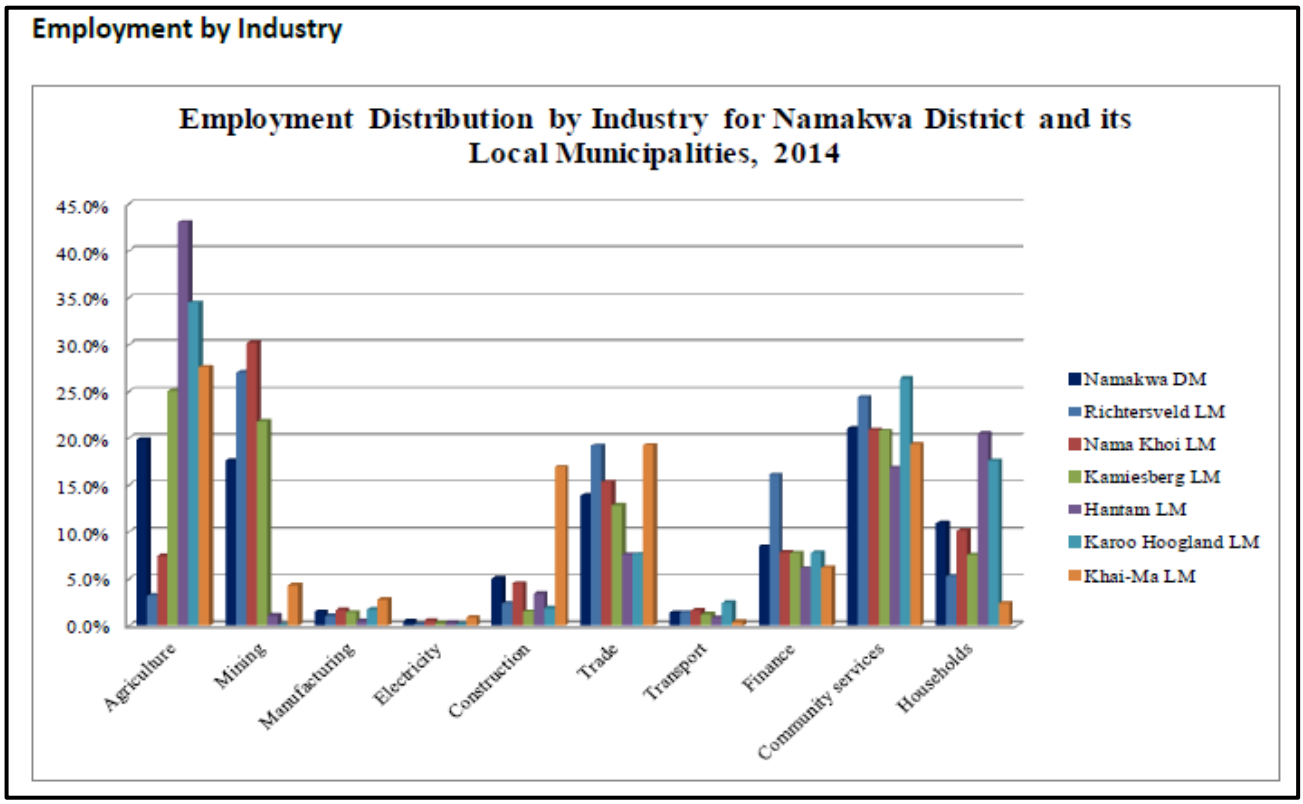


Figure 26: Employment distribution by Industry (Source: Nama Khoi Draft IDP 2018 2019)

8.1.14 Cultural, Heritage and Palaeontological Resources

8.1.14.1 Heritage Impact Assessment

A **Heritage/Archaeological Impact Assessment** was prepared by ASHA Consulting (Pty) Ltd (attached as Appendix D: Heritage Impact Assessment, page 199), as referenced in this report and to be submitted to the South African Heritage Resources Agency (SAHRA) during the 30-day public participation comment period. The recommended mitigation measures from Appendix D: Heritage Impact Assessment, page 199 have been included in this Report.

The Heritage Impact Assessment Report states the following summary:

> *"The field survey revealed massive numbers of Later Stone Age archaeological sites scattered unevenly throughout the study area. The vast majority were fairly ephemeral shell scatters with very little cultural material. Many other sites were larger shell scatters and, in a few instances, shell middens. Some of these had many stone artefacts on them. Other cultural finds noted included pottery (including two lugs and one impressed sherd), ostrich eggshell beads and a few flask mouth fragments. The beads fell into all four size classes potentially indicating a range of ages. In contrast to areas further south, it appears as though the majority of the material is deflated on the surface with very few instances of buried sites likely to occur. A likely reason is the different dune forms present here (elongated low dunes rather than hummock dunes).*
>
> *Another important heritage resource was also revealed. This is the remnants of the historic 19th century copper railway which linked the mines around Concordia and Springbok with Port Nolloth from where the ore was exported. Alongside the railway dumps of coke (fuel) and domestic debris (mostly bottles that would have contained refreshments) were found. The entire copper mining landscape, including the railway, was under consideration for declaration as a world heritage site but the nomination was never completed. Copper mining was a significant driver of the economy of South Africa and the Northern Cape Province. The railway remnants and related features within the study area are regarded here as having at least high local (Grade IIIA) significance, while the entire copper mining landscape is at least of Provincial significance (Grade II).*

It is the stated intention to try and avoid impacts to archaeological resources as far as possible. To this end buffers of 50 m have been proposed around all waypoints to allow for the area of the site itself as well as a buffer area of at least 30 m around the site as required by SAHRA. It is likely that the small test pits and associated access routes, spoil heaps and work areas will be able to avoid all sites but when it comes to the far larger bulk sample trenches it is very likely that some impacts will occur and archaeological mitigation will be required.

The last heritage resource identified was the cultural landscape. Impacts to the landscape were considered insignificant because of the existing mining-related disturbance in the area and the fact that Namaqualand has been the target of diamond mining for nearly a century. The proposed project is thus an appropriate land use and, with rehabilitation, impacts will be temporary."

The following recommendations are made (as per Heritage Impact Assessment, page 199):

- *All prospecting excavation work (including test pits, bulk sample trenches, all access routes, all spoil heaps and all associated work areas around the heaps) needs to be accurately mapped and approved by SAHRA prior to commencement so as to ensure that impacts will not occur;*
- *All sites of Grade GPB or higher must be avoided with a buffer of 50 m from the waypoint location (to account for the site and a protective buffer of at least 30 m);*
- *All archaeological mitigation that still becomes required must be effected by a qualified archaeologist under a permit issued to that archaeologist by SAHRA;*
- *If any fossils, archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution; and*
- *Rehabilitation of the excavations must occur such that the landscape is left looking as similar as possible to its pre-prospecting condition.*

8.1.14.2 Palaeontological Assessment

A **Palaeontological Impact Assessment** of the area was provided by John Pether, a Geological and Palaeontological Consultant, to determine the palaeontological sensitivities of the affected areas, as requested by ASHA Consulting (Pty) Ltd (see **Appendix D: Paleontological Impact Assessment, page 315**).

The report states the following:

"There are no known outcrops of sensitive fossiliferous strata in the Project Area that require protection as NO-GO sites, such as spots where fossil bones occur in obvious abundance."

The following mitigations are proposed:

There will only be three prospecting pits open at any given time, one in the process of backfilling and rehabilitation, one that is operational for logging and one in the process of excavation. Similarly, only one bulk sample trench will be open at any given time. The duration of the prospecting is not specified, but presumably will take place over a few years.

It is not feasible for a specialist to routinely monitor the excavation of the pits and trenches. Routine monitoring can only be achieved by the co-operation of the people on the ground. By these are meant personnel in supervisory/inspection roles, such as the geologist, surveyor, pit foremen, etc., who are willing and interested to look out for occurrences of fossils. A monitoring presence is critical for spotting a major "strike" of fossil bones and stopping further damaging excavation.

It is recommended that a requirement to be alert for fossil materials and archaeological material uncovered during the prospecting be included in the Environmental Management Programme (EMPr) for the proposed prospecting operations. Under supervision of the Environmental Control Officer (ECO) and as part of Environmental and Health & Safety awareness training, personnel involved in the prospecting excavations must be instructed to be

alert particularly for the occurrence of fossil bones. Due to the scarcity and importance of fossil bones in the affected formations it is important that such ephemeral opportunities to rescue fossil bones must not be overlooked. In the event of such discoveries the Fossil Finds Procedure (FFP) provided (Appendix 5 of the PIA*), for incorporation into the Environmental Management Programme for the proposed prospecting, must be followed.*

Fossils that were not seen during excavation may also be revealed when overburden spoil is returned to the excavation when backfilling. Fossil bones may also be noticed weathering out in the sides of old prospecting excavations, or exposed in the adjacent wind-eroded spoil heaps of excavated material.

Very importantly, mine staff must be empowered to rescue the fossil material that appears sporadically, but quite routinely during excavation and must be promptly rescued from loss. For instance, as fossil tortoises are quite common, they should be in the category of "allowed" rescue by mine staff cf. isolated bone finds in the FFP below (Appendix 5 of the PIA*).*

As mentioned above, finds of petrified teeth in rotary pan concentrates have provided critical age constraints for the ages of formations. Importantly, the previous finds have come from small-scale, "hands-on" operations using rotary pans to concentrate heavy mineral pebbles, such as the proposed operation herein. Whereas, in the larger mines, high-throughput concentration systems using Heavy Media Separation (HMS) plants and X-ray Sortex-type machines to extract diamonds in a "hands off" security regime, the petrified fossils in the concentrate are not captured.

It is highly recommended that mine staff must be empowered to rescue the petrified fossil material, usually teeth, that is retained in the rotary pan concentrates and which is seen during their sorting.

In the event of the uncovering of fossil bones, or fortuitously-preserved very shelly beds, which on consultation are deemed to be significant finds, a professional palaeontologist must be appointed to excavate the fossil bones and sample the shell beds. Said palaeontologist must also undertake the recording of the stratigraphic context and sedimentary geometry of the exposure and the compilation of the report to SAHRA and the relevant curatorial institution, e.g. the IZIKO S.A. Museum.

A contribution to mitigation which is of great importance is the creation of a systematic archive of the pit and trench exposures over the duration of the prospecting, and later possible mining. With modern technology such as smartphones and cameras capable of recording high-resolution images inexpensively, accompanied by GPS positioning, and freely available software that enables the stitching together of image mosaics of the pit faces, the creation of systematic records of the pit faces is now greatly facilitated. Involving the Project Geologist, or perhaps a student doing fieldwork for a thesis, a systematic archive of the pit and trench exposures will be a significant positive contribution to the geoscience and geoheritage of the Namaqualand coastal-plain formations in this area.

In this endeavour of diligent mitigation this consulting palaeontologist/stratigrapher can play a collaborating role in assisting with the interpretation of the exposures and identifying emailed images of fossil shells on an ad hoc basis. Also in this context, in co-operation and liaison with the Project Geologist, it may be mutually beneficial that the consulting palaeontologist carry out field inspections of the large prospecting trenches. Involving a day or two of fieldwork, the aim of field inspection is to examine the various formations exposed in the excavations, recording context and geometry, any shell fossil content, take fossil samples, and contribute to the archive of the exposures.

The proposed mitigation actions for the prospecting programme are relatively easily accomplished and their implementation will result in a positive impact for palaeontology arising from the proposed prospecting operation. The Director, Project Geologist and ECO for Dansile Nxikwe Diamonds CC are welcome to contact me about any clarifications or advice.

8.2 Description of the current land uses

- Figure 10 provides an overview of the current land use of the project area as sourced from the BGIS Map Viewer, as further described in Section 8.1.3 above. Photograph series 1 shows the historical mining excavation where the mobile processing plant will be located, and Photograph 2 shows the landing strip located in the salt pan.
- Figure 11, which shows the 5m contours also includes the existing land uses such as the registered dumpsite located in the northern most section of the prospecting area, and the new oxidation ponds.

8.3 Description of specific environmental features and infrastructure on the site

- Refer to Figure 7, which shows the prospecting pitting positions, and Figure 8, the bulk sampling areas.
- Figure 10 to Figure 23 and the corresponding paragraphs in Section 8.1 describe the environmental features of the biophysical and socio-economic characteristics of the prospecting area.

8.4 Environmental and current land use map

Refer to Section 8.2 and 8.3 above.

9 IMPACTS IDENTIFIED

The potential risks arising from the prospecting operation discussed in Section 3 above are applicable to the proposed prospecting right application as listed below.

9.1 Potential Risks/Impacts

9.1.1 Potential Risks associated with prospecting.

- Safety of personnel operating large earth-moving equipment.
- Management of dust, noise and vibration associated with prospecting activities, in relation to surrounding communities.
- Potentially dangerous areas like excavations or equipment left behind and uncontrolled access to a potentially unsafe post-prospecting area.

9.1.2 The potential risk of environmental impacts

- Disturbance to sensitive environments such as land with historical or conservation value, watercourses including the salt pan and wetland feature, terrestrial habitats, fauna and flora and any associated biodiversity corridors, and high potential agricultural land.
- Potential contamination of groundwater from tailings, unmanaged use of hydrocarbons on-site, and incorrect storage of hazardous substances.
- Waste classes are not kept in separate streams and incomplete removal of waste.
- Stockpiles and leftover product remaining after prospecting.
- Loss of indigenous vegetation due to disturbed footprints at prospecting pits and bulk sampling.
- Increased soil erosion causing loss of topsoil.
- Climate change causing an increase in temperature and decrease in rainfall, reducing vegetation cover leading to wind-blown soil erosion.
- Dust generation from unsurfaced roads.
- Chemical contaminants impacting surface and/or groundwater quality or resulting in discharge that exceeds the concentrations permitted.
- Vehicle wash bays and workshop facilities produce petrochemical and solvent contaminated runoff.
- Sanitary conveniences, fuel depots or storage facilities of potentially polluting substances can contaminate surface water.
- Oil fuel leaks onto soil through the earthmoving and transport equipment and machinery or spillage of fuel during the transfer from fuel bowser to equipment.
- The post-prospecting landscape increases the requirement for long-term monitoring and management.
- Unwanted ruins, buildings, foundations, footings and waste management practices creating or leaving legacies.
- Sub-surface infrastructure remaining behind, limiting the intended post-closure land use including footings and foundations, power supply and water installations including pumps and pipelines.
- Equipment and other items used during the prospecting operation were left behind.
- Incomplete removal of re-usable infrastructure.
- Rubble from demolished infrastructure left behind.
- Post-prospecting topography is not compatible with the original landform.

9.1.3 Potential risks associated with viable and sustainable land.

- Uncontrolled expansion of prospecting footprint by not restricting the area disturbed by prospecting and the associated activities/infrastructure, resulting in loss of land with agricultural potential.
- Uncontrolled development of roads, where existing farm roads are not used for prospecting operations and redundant internal roads are left behind.
- Post-prospecting landform not compatible with the surrounding landscape and not capable of productive land use that achieves a land capability equal to that of pre-prospecting conditions.
- Long term changes in land use are caused by not implementing prompt rehabilitation and maintenance of disturbances when possible as part of the annual rehabilitation plan.

- Unsuccessful rehabilitation can reduce the post-prospecting land use options. Rehabilitated areas could be too unstable to support post-prospecting land use objectives compatible with surrounding areas.
- Disturbance of ecology due to loss of habitat and cumulative impact of illegal collecting during long-term or life of mine can degrade areas and reduce the viability of adjacent areas.
- Inadequate control of alien invasive vegetation species can result in the establishment of populations or seed sources that threaten adjacent areas.

9.1.4 Potential Risks associated with a post-prospecting landform.

- Impact on surface water and the salt pan through modification of infiltration rates by increasing the extent of hardened surfaces.
- Inadequate topsoil restoration or creation of unnatural surface topography or slope form which could impact lower or adjacent slopes due to increased runoff velocity.
- Altered storm water runoff response due to large impervious areas and concentrated runoff in drainage systems. Concentrated storm runoff from infrastructure areas is erosive, causing sheet, rill and donga erosion features.
- Potentially dangerous areas like excavations or tailings incorrectly rehabilitated including uncontrolled access to potentially unsafe post-prospecting areas.

9.1.5 Potential Risks associated with the socio-economic environment.

- Disturbance of local communities in urban and rural areas caused by noise and dust emissions and increase in heavy vehicles along transport routes.
- An influx of people into the local communities looking for work, with an increase in demand for housing, schooling and services. Such an influx of workers into a community often results in a change in social dynamics.
- Positive impacts include, for example, the creation of both formal and informal businesses to supply additional needs, whilst negative social impacts include, for example, an increase in substance abuse, HIV transmission and unwanted pregnancies.
- Staff losing their jobs at mine closure can have devastating effects on communities that are reliant on mine-based income.
- Job losses of secondary industries, businesses and contractors and contractual agreements with service providers surpassing mine closure date.
- Lack of compliance with the approved EMPr and a lack of auditing of the EMPr.
- Prospecting activities closure stalled due to non-compliance with relevant legislation (national, provincial and local).
- Insufficient funds for complete rehabilitation.

9.1.6 Potential Risks associated with visual intrusion, noise, vibration, light pollution and air emissions.

- Terrain morphology plays a critical role in defining the visual envelope of prospecting developments and can either reduce or enhance visual impact. Apart from visual intrusion, there is also the risk of a reduced sense of place. The visual intrusion impact of prospecting activity would be on nearby roads, homesteads, settlements, tourist accommodation, and along tourism routes or corridors.
- The visual disturbance would be caused by prospecting activities such as excavations. Buildings provide a colour contrast, as do disturbed areas against adjacent natural areas.
- Nuisance effects of air emissions due to a lack of implementation of dust suppression activities could impact on communities.
- Dust generated on haul roads reduces visibility, representing a safety hazard.
- Dust can retard vegetation growth and reduce the palatability of vegetation.
- The cumulative effect of a rise in the ambient noise levels or high noise levels in specific areas that exceed specified levels would impact on communities in close proximity.
- Noise disturbance and light pollution would result from night-time activities (if applicable) in areas that are in close proximity to communities.

9.1.7 Potential Risks associated with regard archaeological sites, cultural heritage sites or graves.

- Disturbance of identified surface, or unknown sub-surface archaeological sites, if mitigation and monitoring is not implemented as per mitigating measures in a Heritage and Palaeontology Impact Assessment
- Progressive development can encroach upon or disturb archaeological sites, cultural heritage sites or graves.

9.2 Potential Impacts and Risks associated with the Preferred Alternative.

Refer to Section 6 above, which describes the location, type of activity, design or layout, technology and operational alternatives, and the preliminary result of having a preferred and only alternative, that of the Prospecting Right as per the Plan shown in Figure 7 & Figure 8. The potential impacts and risks associated with this preferred and only alternative are listed in Table 9 below.

Table 9: Preferred Alternative: Potential Impacts and Risks per Phase per Activity

Phase	Activities	Potential Impacts & Risks		Significance (before mitigation)	Probability	Duration	Significance after mitigation
CONSTRUCTION PHASE	Access & Haul Roads	Dust generation from vehicles using existing access and haul roads		Medium (-)	Definite	Short-term	Low
		Soil compaction from repeated use of existing access and haul roads		Medium (-)	Definite	Short-term	Low
	Construction of Site Establishment Activities: • Processing plant and associated infrastructure • Water and wastewater infrastructure • Electricity infrastructure • Waste management • Storm water control • Access roads	Topsoil stripping and stockpiling, soil erosion and soil compaction (land capability)		Medium (-)	Definite	Short-term	Low
		Surface and ground water resource pollution		Medium (-)	Possible	Short-term	Low
		Biodiversity disturbance from activities and vehicles		Medium (-)	Definite	Short-term	Medium-Low
		Soil contamination and waste management		Medium (-)	Possible	Short-Term	Low
		Visual impact		Medium (-)	Definite	Short-term	Low
		Emissions (Dust and light), Noise and Vibration causing nuisance from topsoil stripping, site establishment activities and vehicles		Medium (-)	Definite	Short-term	Low
		Lack of socio-economic impact on job security, employment creation and economic spin-offs (i.e. prior to mine construction)		Medium (-)	Definite	Short-term	Medium (+)
		Palaeontology	Loss of fossil bones from excavations in the marine Avontuur, Hondeklipbaai and Curlew Strand formations	Medium (-)	Probable	Permanent	Medium (-)
			Loss of fossil bones from excavations in the aeolian formations included pedocretes and pan deposits.	Medium (-)	Probable	Permanent	Medium (-)
			Loss of fossil shells from excavations in the Avontuur and Hondeklipbaai formations.	Medium (-)	Probable	Permanent	Medium (-)

Phase	Activities	Potential Impacts & Risks		Significance (before mitigation)	Probability	Duration	Significance after mitigation
			Loss of fossil shells from excavations in the marine Curlew Strand Formation raised beaches.	Medium (-)	Probable	Permanent	Medium (-)
		Heritage	Potential impacts on archaeological resources	High (-)	Highly probable	Regional, permanent	Low (-)
			Potential impacts on graves	High (-)	Possible	Local, permanent	Low (-)
			Potential impacts on the cultural landscape	High (-)	Definite	Local, short term	Low (-)
OPERATIONAL PHASE	• Services and associated infrastructure • Primary Processing operation • Tailings Storage Facility • Water and wastewater management • Waste generation and management • Overburden dumps • ROM stockpiles • Access roads	Change in topography		Medium (-)	Definite	Long-term	Low (-)
		Erosion control or runoff diversion structures and soil compaction (land capability)		Medium (-)	Definite	Long-term	Low (-)
		Water resources: potable water to be trucked in from town; process water to be extracted from the sea and recycled during operation; potential for groundwater pollution from hydrocarbons.		Medium (-)	Unlikely (surface water resources) Unlikely (ground water resource pollution)	Short-term Short-term	Low (-) Very Low (-)
		Biodiversity disturbance from activities		Medium (-)	Definite	Short-term	Medium-Low (-)
		Soil contamination and waste management		Medium (-)	Possible	Short-Term	Low (-)
		Visibility of prospecting operations		Medium (-)	Definite	Long-term	Low (-)
		Dust, vehicle, noise and light emissions from site activities and haul trucks		Medium (-)	Definite	Long-term	Low (-)
		Lack of socio-economic impact on job security, employment creation and economic spin-offs (i.e. prior to prospecting)		Medium (-)	Definite	Long-term	Low (-)
		Palaeontology	Loss of fossil bones from excavations in the marine Avontuur, Hondeklipbaai and Curlew Strand formations	Medium (-)	Probable	Permanent	Medium (-)

Phase	Activities	Potential Impacts & Risks		Significance (before mitigation)	Probability	Duration	Significance after mitigation
			Loss of fossil bones from excavations in the aeolian formations included pedocretes and pan deposits.	Medium (-)	Probable	Permanent	Medium (-)
			Loss of fossil shells from excavations in the Avontuur and Hondeklipbaai formations.	Medium (-)	Probable	Permanent	Medium (-)
			Loss of fossil shells from excavations in the marine Curlew Strand Formation raised beaches.	Medium (-)	Probable	Permanent	Medium (-)
		Heritage	Potential impacts on archaeological resources	High (-)	Highly probable	Regional, permanent	Low (-)
			Potential impacts on graves	High (-)	Possible	Local, permanent	Low (-)
			Potential impacts on the cultural landscape	High (-)	Definite	Local, short term	Low (-)
DECOMMISSIONING PHASE	Rehabilitation of the prospecting right area: shaping landscape profile; landscape the waste rock dumps; tailings, scarifying compacted areas and vehicle tracks; replacing topsoil, etc.	Rehabilitation: Visibility of the rehabilitated prospecting operations; Biodiversity (wildlife and vegetation) disturbance from vehicles; Dust and vehicle emissions from rehabilitation activities; Erosion control or run-off diversion structures		Medium (-)	Definite	Long-term	Low (-)
		Socio-economic impacts: employment during rehabilitation and decommissioning activities.		Medium (-)	Definite	Short-term	Medium (+)

9.3 Potential Impacts and Risks associated with the No-Go Alternative

There would be no change to the biophysical environment with the No-Go Alternative. The No-Go Alternative implies that the Applicant would forgo an opportunity to provide employment opportunities in an area and sector identified for opportunities for job provision and economic growth, and the sourcing of diamonds. This potential would not be reached with the "no-go" option.

9.4 The methodology used in determining the significance of potential impacts

Refer to Table 10 below, which provides the impact assessment criteria applied in the rating of the impacts associated with each phase of the proposed prospecting activity for the Preferred and Only Alternative. Each impact is assessed in terms of nature (character status); extent (spatial scale); duration (time scale); probability (likelihood) of occurring; reversibility of the impact; the degree to which the impact may cause irreplaceable loss of resources; the significance (size or magnitude scale) prior to mitigation; the degree to which the impact can be mitigated; and, the significance (size or magnitude scale) after mitigation.

Table 10: Impact Assessment Criteria (GDSC Table)

ASSESSMENT CRITERIA	
NATURE	
Positive	Beneficial to the receiving environment
Negative	Harmful to the receiving environment
Neutral	Neither beneficial or harmful
EXTENT (GEOGRAPHICAL)	
Site	The impact will only affect the site
Local/ district	Will affect the local area or district
Province/region	Will affect the entire province or region
International and National	Will affect the entire country
CONSEQUENCE	
Loss/gain	The impact will result in loss or gain of resource
No loss/gain	The impact will result in no loss or no gain of resource
DURATION	
Construction period / Short term	Up to 3 years
Medium term	Up to 6 years after construction
Long term	More than 6 years after construction
PROBABILITY	
Definite	Impact will certainly occur (>75% probability of occurring)
Probable	Impact likely to occur (50 – 75% probability of occurring)
Possible	Impact may occur (25 – 50% probability of occurring)
Unlikely	Impact unlikely to occur (0 – 25% probability of occurring)
REVERSIBILITY	
Reversible	Impacts can be reversed though the implementation of mitigation measures
Irreversible	Impacts are permanent and can't be reversed by the implementation of mitigation measures
IRREPLACEABLE LOSS OF RESOURCES	
High	The impact is result in a complete loss of all resources
Medium	The impact will result in significant loss of resources
Low	The impact will result in marginal loss of resources
No Loss	The impact will not result in the loss of any resources
CUMULATIVE EFFECTS	
High	The impact would result in significant cumulative effects
Medium	The impact would result in moderate cumulative effects
Low	The impact would result in minor cumulative effects
SIGNIFICANCE RATINGS	
Very High	Major to permanent environmental change with extreme social importance.

High	Long term environmental change with great social importance.
Medium	Medium to long term environmental change with fair social importance.
Low	Short to medium term environmental change with little social importance.
Very low	Short-term environmental change with no social importance
None	No environmental change
Unknown	Due to lack of information
DEGREE TO WHICH IMPACT COULD BE AVOIDED/MANAGED/MITIGATED	
High	The impact could be significantly avoided/managed/mitigated.
Medium	The impact could be fairly avoided/managed/mitigated.
Low	The impact could be avoided/managed/mitigated to a limited degree.
Very Low	The impact could not be avoided/managed/mitigated; there are no mitigation measures that would prevent the impact from occurring.

9.5 The positive and negative impacts that the proposed activity and alternatives will have on the environment and community that may be affected

9.5.1 Positive impacts

- Creation of employment and job security with economic spin-offs.
- Provision of diamonds for local and international markets.
- Access road upgrading.
- Reduction in development footprint by placing processing plant infrastructure in historical mining excavation.
- Clean-up of historical mining excavation areas as it is currently used as an illegal dumping site.

9.5.2 Negative impacts

The key potential negative impacts associated with the prospective activity include the following:

- Site access:
  - Disturbance of onsite fauna and flora.
  - Soil compaction from repeated use of access tracks.
- Site Establishment Activities (topsoil stripping and stockpiling, placement of logistics, waste generation and management)
  - Visual intrusion.
  - Emissions (dust, vehicle and noise) from topsoil stripping; vehicles and machinery.
  - Wildlife and vegetation disturbance from site preparation.
  - Contamination and disturbance of topsoil and soil from compaction, including soil disturbance due to topsoil stockpiling.
  - Waste generation.
  - Water use for dust suppression during site establishment.
- Prospecting and processing activities:
  - Noise is caused by the machinery and vehicles on-site, and by vehicles on haul roads.
  - Visibility of the prospecting operations.
  - Dust emissions from general site activities (vehicle entrained dust).
  - Disturbance of biodiversity from vehicles.
  - Disturbance of biodiversity due to prospecting pits and bulk excavations.
  - Possible impact on salt pan due to close proximity of prospecting activities.
  - Water use for processing to be extracted from the sea.
  - Contamination of soil from hydrocarbon spills and compaction on access tracks.
  - Contamination of groundwater and salt pan through unmanaged use of machinery.
  - Storage and use of hazardous chemicals in processing.
  - Disposal of sewage from logistics in an on-site Biozone type facility that is containerised. Effluent will be taken off-site and disposed of at the municipal sewage works.

  - The specialist heritage resources impact assessment report as well as the paleontological impact assessment (Appendix D, page 199)was prepared for the EIA Phase and will be submitted to the South African Heritage Resources Agency (SAHRA) during the 30-day public participation comment period. Any additional recommendations and/or mitigation measures stipulated by SAHRA will be included in the Final EIA Report.
  - The proposed location of the processing area including the tailings disposal has been identified based on the existing historical excavation located approximately 250m inland of the High Water Mark[14].
  - Unauthorised access leading to injury in areas of excavation and tailings.
- Rehabilitation of the prospected area, scarifying compacted areas and vehicle tracks:
  - Dust emission from decommissioning activities (vehicle entrained dust).
  - Soil erosion of topsoil.
  - Scarce revegetation due to poor rehabilitation and topsoil return.

9.6 The possible mitigation measures that could be applied

Refer to Table 11 on page 79 for the potential mitigation measures included under each impact.

9.7 The outcome of the Site Selection Matrix & Final Site Layout Plan

Refer to Figure 7 & Figure 8 for the overall prospecting right area, presented for comment as part of the Scoping Phase stakeholder engagement process.

9.8 Motivation where no alternative sites were considered

Alternatives have been considered for this project, as described in Section 6 above. Where alternatives are not likely to be considered in the Impact Assessment Phase, reasons have been provided in Section 6 above.

9.9 Statement Motivating the Preferred Sites

Refer to Section 6 above.

The project site has been selected based on the results from prospecting. The layout and technology of each prospecting pit and potential bulk sampling trench and associated infrastructure has been determined by the shape, position and orientation of the mineral resource expected to be found based on research. Refer to the Prospecting Plans included in Figure 7 & Figure 8.

In summary, therefore:

- The **Preferred Alternative** is the prospecting of diamonds, as per the locations shown in Figure 7 & Figure 8.
- The preferred and **only location alternative** of the prospecting activity is as per Figure 7 & Figure 8, with the processing plant and tailings disposal location within an existing historical mining excavation in close proximity to the sea to access seawater for processing. The existing access roads will be utilised and sections upgraded or new routes developed as required. No electricity powerline connections are required.
- The preferred **activity alternative** is the prospecting for alluvial diamonds based on the mineral resources investigated during the previous prospecting.
- The preferred **technology alternative** is the use of the mobile processing plant, diesel generators and seawater for the processing as described in Section 6.5 above.
- The preferred **operational alternative** is the method of having three prospecting pits open at any given time, one in the process of rehabilitation, one that is operational and one in the process of development.

The operational approach is practical and based on best practice to ensure a phased approach of prospecting followed by rehabilitation in sequential stages.

[14] The distance has been measured on Google Earth from the outer-most edge of the area marked as the processing plant on Figure 2 and Figure 7.

There are therefore no other reasonable or feasible sites, layouts, activities, technologies, or operational alternatives for further consideration in the impact assessment component, other than the mandatory "no-go" alternative that must be assessed for comparison purposes.

9.10 Full Description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (in respect of the final site layout plan) through the life of the activity

Refer to the Impact Assessment Methodology detailed in Section 9.4 above and employed in the rating of impacts detailed in the Impact Tables attached at **Appendix E, page 366**.

Refer to Section 9.5 above and Table 11 below, which references the findings from **Appendix E, page 366** and the measures to avoid, reverse, mitigate or manage the identified impacts to determine the extent of the residual risks that need to be managed and monitored.

Table 11: Potential Residual Risk Pre-& Post-Mitigation for the Preferred & Only Alternative

NAME OF ACTIVITY	PHASE In which impact is anticipated	POTENTIAL IMPACT	ASPECTS AFFECTED	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
POST-APPROVAL ACTIVITIES						
Negotiate access with the landowner – roads to be used and open or close status of gates to be used	Planning and design	• Loss of vegetation and associated biodiversity • Loss of livestock	• Biodiversity • Landowner's assets	• Low (-)	• Unnecessary destruction of vegetation avoided by ensuring that traffic and personnel movement is restricted to demarcated areas. No traffic should be allowed on the rehabilitated areas. • Ensure all gates are kept closed and locked as required by the landowner.	• Low (-)
Demarcate prospecting area as defined in PWP and EMPr		• Non-compliance	• Legal compliance	• High (-)	• Ensure that prospecting activities are contained within approved boundaries.	• Low (-)
SITE ACCESS & SITE ESTABLISHMENT ACTIVITIES						
Conduct Environmental Induction training of staff	Construction	• Poor management of environmental impacts	General environmental management	• Medium (-)	Impacts to be addressed: • Hydrocarbon and waste management • Dust control • Traffic safety	• Low (-)
All access roads are already in place	Construction	• Soil compaction	• Land capability	• Low (-)	Scarify compacted areas during rehabilitation	• Low (-)
Pre-fabricated buildings, mobile containers for site office and secure storage area. No permanent infrastructure.	Construction	• Soil Erosion • Loss of biodiversity • Emissions (dust, vehicles & noise) • Increase in logistics capacity to facilitate increased prospecting production	• Land capability • Biodiversity • Air quality • Socio-economic spin-offs (+)	• Medium (-) • Low (-) • Low • Medium (-)	• Topsoil management • Demarcate area for development footprint • Dust reduction • Hydrocarbon and waste management • Job creation (+) & local economic spin-offs (+)	• Low (-) • Very-Low (-) • Very-Low (-) • Medium (+)
Prepare screening area, processing area and dispatch yard (existing disturbance areas)	Construction					
Prepare areas for compressors and generators install compressors, and mobile pump for sea water abstraction.	Construction					
Hydrocarbon storage	Construction	• Soil contamination	• Land capability	• Medium	• Dust reduction • Hydrocarbon management	• Low

NAME OF ACTIVITY	PHASE In which impact is anticipated	POTENTIAL IMPACT	ASPECTS AFFECTED	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
Potable water supply by water tanks	Construction	• Water availability	• Domestic water supply resources in municipal area	• Low	• Use water wisely and prevent pollution as per EMPr.	• Very Low
Electrical supply by gensets	Construction	• Soil contamination	• Land capability	• Low to Medium (-)	• Proper management of hydrocarbon and spills	• Low (-)
OPERATIONAL PHASE ACTIVITIES						
Excavation of prospecting pits and trenches	Operational	• Change in topography • Soil erosion • Water use • Loss of vegetation • Waste management • Visual impact • Surface water resources and salt pan	• Land capability • Municipal resources • Biodiversity • Waste management • Visual landscape • Waste management	• High (-) • Medium (-) • High (-) • High (-) • Medium-High (-) • Medium (-)	• Remove vegetation and topsoil if required and stockpile topsoil. • Use water wisely and prevent pollution as per EMPr. • Limit size of excavation. • Backfill with waste rock if feasible. • Dust management • Demarcate development footprint • Apply mitigation to reduce visual impact during rehabilitation • Proper waste management and demarcation of excavation areas to reduce impacts on surface water and pan	• Medium (-) • Low (-) • Medium-Low (-) • Medium-Low (-) • Medium-Low (-) • Low (-)
Removal of excavated materials from prospecting pit and trenches	Operational	• Management of emissions (dust, machinery & noise)	• Air quality	• Medium	• Dust and emissions control	• Low
Infield screen	Operational	• Waste management • Emissions • Visual impact • Change in topography	• Waste management • Air quality • Visual landscape • Land capability	• Medium (-) • Medium (-) • Medium(-) • High (-)	• Backfilling of trenches with screened materials • Waste rock dumping management • Management of emissions (dust, vehicles & noise) • Demarcate development footprint • Apply mitigation to reduce visual impact during rehabilitation as well as backfilling as soon as possible. • Backfill and rehabilitate as best possible	• Low (-) • Low (-) • Low(-) • Medium to Low (-)
Backfill of scalping	Operational	Waste management Emissions Visual impact	• Waste management • Air quality	• High (-) • Medium (-) • Medium-High (-)	• Remove vegetation and topsoil if required and stockpile topsoil. • Management of emissions (dust, vehicles & noise)	• Medium-Low (-) • Low (-) • Medium-Low (-)

NAME OF ACTIVITY	PHASE In which impact is anticipated	POTENTIAL IMPACT	ASPECTS AFFECTED	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
			• Visual landscape		• Waste rock dumping management	
Transport waste to waste dump	Operational	• Management of emissions (dust, machinery & noise) • Waste management	• Air quality • Waste management	• Medium • High (-)	• Dust and emissions control • Waste dump management	• Low • Medium-Low (-)
Suitable materials to be transported to processing.	Operational	• Soil contamination • Emissions (dust, vehicles & noise)	• Land capability • Air quality	• High (-) • Medium (-)	• Dust reduction • Hydrocarbon and waste management	• Medium-Low (-) • Low (-)
Stockpile of processing materials.	Operational	• Management of emissions (dust, machinery & noise)	• Air quality	• Medium	• Dust and emissions control	• Low
Tailings containing seawater and alluvial deposit.	Operational	• Soil contamination • Loss of vegetation and associated biodiversity • Loss of livestock • Safety risk of open tailings	• Land capability • Biodiversity • Landowner's assets • Safety of unauthorised persons	• Medium (-) • Medium to Low (-) • Medium (-) • Medium (-0	• Tailings Waste management • Unnecessary destruction of vegetation avoided by using already disturbed areas • Ensure all gates are kept closed and locked as required by the landowner. • Access control and fencing	• Low (-) • Low (-) • Low (-) • Low (-0
Use of Hydrocarbon storage.	Operational	• Soil contamination • Emission (dust, vehicles & noise)	• Land capability • Air quality	• High (-) • Medium (-)	• Dust reduction • Hydrocarbon and waste management	• Medium-Low (-) • Low (-)
Personnel amenity use.	Operational					
Use of potable water in water tanks,	Operational	• Water availability	• Domestic water supply resources in municipal area	• Low (-)	• Use water wisely and prevent pollution as per EMPr.	• Very Low(-)
Use of seawater for processing plant.	Operational	• Discarding of sea-water filtration into old excavated pit.	• Waste management	• Low (-)	• Waste management	• Low (-)

NAME OF ACTIVITY	PHASE In which impact is anticipated	POTENTIAL IMPACT	ASPECTS AFFECTED	SIGNIFICANCE if not mitigated	MITIGATION TYPE	SIGNIFICANCE if mitigated
Logistics area: temporary service, wash bay, storage facilities, waste management facilities, and the processing plant.	Operational	• Soil contamination • Water availability • Discarding of waste water • Loss of vegetation and associated biodiversity	• Land capability • Available resources use • Waste management • Biodiversity	• Medium (-) • Medium (-) • Medium (-) • Medium (-)	• Hydrocarbon and waste management • Use water wisely and prevent pollution as per EMPr. • Unnecessary destruction of vegetation avoided by using already disturbed areas.	• Low (-) • Low (-) • Low (-) • Low (-)
DECOMMISSIONING PHASE ACTIVITIES						
Levelling, infilling of excavations and pits, creating side slopes.	Decommissioning Rehabilitation	• Topography • Visual • Safety	• Land capability • Landscape • Safety	• Medium (-) • Medium (-) • Medium (-)	• Waste management and rehabilitation	• Very low (-)
Fence excavation and tailings securely.	Decommissioning Rehabilitation				• Safety	• Very low (-)
Remove all structures, foundations and footings not required by landowner.	Decommissioning Rehabilitation				• Rehabilitation according to Rehabilitation, Decommissioning and Closure Plan attached as **Appendix F, page 403**.	• Very Low (-)
Rip all hardened areas and allow to revegetate naturally.	Decommissioning Rehabilitation					
Removal of waste	Decommissioning Rehabilitation	• Soil contamination • Visual	• Land capability Landscape	• Medium (-) • Medium (-)	• Waste can be removed as it is created. • Proper site clean-up after operational phase	• Low (-)

10 SUMMARY OF SPECIALIST REPORTS

Table 12: Summary of Specialist Reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
Heritage Impact Assessment	A Heritage Impact Assessment Report was prepared by ASHA Consulting (Pty) Ltd. (attached as **Appendix D, 22.1** Heritage Impact Assessment**, page 199**), **The following recommendations are made:** ***It is recommended that the proposed prospecting be approved but subject to the following recommendations:*** • *All prospecting excavation work (including test pits, bulk sample trenches, all access routes, all spoil heaps and all associated work areas around the heaps) needs to be accurately mapped and approved by SAHRA prior to commencement so as to ensure that impacts will not occur;* • *All sites of Grade GPB or higher must be avoided with a buffer of 50 m from the waypoint location (to account for the site and a protective buffer of at least 30 m);* • *All archaeological mitigation that still becomes required must be effected by a qualified archaeologist under a permit issued to that archaeologist by SAHRA;* • *If any fossils, archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution; and* • *Rehabilitation of the excavations must occur such that the landscape* is left looking as similar as possible to its pre-prospecting condition. **Acceptability of the proposed activity with respect to heritage resources** "Given that impacts can be avoided or easily mitigated, it is the opinion of the heritage specialist that this prospecting project may be authorised in full."	**X** All of the recommendations included in the column to the left have been included in this report.	Section 8.1.2 **Appendix D, 22.1** Heritage Impact Assessment**, page 199** PART B: EMPr, page 100 Table 14 Impact Tables (**Appendix E, page 366**) Closure Plan **(Appendix F, page 403**)

	(Referenced from Section 10.3 in **Appendix D, 22.1** Heritage Impact Assessment**, page 199**).		
A palaeontological impact assessment was commissioned by the HIA specialist and provided by John Pether, Geological and Palaeontological Consultant.	A **palaeontological impact assessment** of the area was undertaken by John Pether, Geological and Palaeontological Consultant, on request of ASHA Consulting (Pty) Ltd to determine the palaeontological sensitivities of the affected areas (see **Appendix D, 22.2** Paleontological Impact Assessment**, page 315**). Pether states that: "*There are no known outcrops of sensitive fossiliferous strata in the Project Area that require protection as NO-GO sites, such as spots where fossil bones occur in obvious abundance. The palaeontological resources are subsurface and consequently considerations of fossil potential do not result in preferred sites and the precise locations of the prospecting pits and trenches do not affect this assessment.*" **The following recommendations are made** *"The duration of the prospecting is not specified, but presumably will take place over a few years.* *It is not feasible for a specialist to routinely monitor the excavation of the pits and trenches. Routine monitoring can only be achieved by the co-operation of the people on the ground. By these are meant personnel in supervisory/inspection roles, such as the geologist, surveyor, pit foremen, etc., who are willing and interested to look out for occurrences of fossils. A monitoring presence is critical for spotting a major "strike" of fossil bones and stopping further damaging excavation.* *It is recommended that a requirement to be alert for fossil materials and archaeological material uncovered during the prospecting be included in the Environmental Management Programme (EMPr) for the proposed prospecting operations. Under supervision of the Environmental Control Officer (ECO) and as part of Environmental and Health & Safety awareness training, personnel involved in the prospecting excavations must be instructed to be alert particularly for the occurrence of fossil bones. Due to the scarcity and importance of fossil bones in the affected formations it is important that such ephemeral opportunities to rescue fossil bones must not be overlooked. In the event of such discoveries the Fossil Finds Procedure (FFP) provided (Appendix 5), for incorporation into the Environmental Management Programme for the proposed prospecting, must be followed.* *Fossils that were not seen during excavation may also be revealed when overburden spoil is returned to the excavation when backfilling. Fossil bones may also be noticed weathering out in the sides of old prospecting excavations, or exposed in the adjacent wind-eroded spoil heaps of excavated material.*	**X** All of the recommendations included in the column to the left have been included in this report.	Section 8.1.2 **Appendix D, 22.1** Heritage Impact Assessment**, page 199** PART B: EMPr, page 100 Table 14 Impact Tables (**Appendix E, 366**) Closure Plan **(Appendix F, page 403**)

	Very importantly, mine staff must be empowered to rescue the fossil material that appears sporadically, but quite routinely during excavation and must be promptly rescued from loss. For instance, as fossil tortoises are quite common, they should be in the category of "allowed" rescue by mine staff cf. isolated bone finds in the FFP below (Appendix 5). *As mentioned above, finds of petrified teeth in rotary pan concentrates have provided critical age constraints for the ages of formations. Importantly, the previous finds have come from small-scale, "hands-on" operations using rotary pans to concentrate heavy mineral pebbles, such as the proposed operation herein. Whereas, in the larger mines, high-throughput concentration systems using Heavy Media Separation (HMS) plants and X-ray Sortex-type machines to extract diamonds in a "hands off" security regime, the petrified fossils in the concentrate are not captured.* *It is highly recommended that mine staff must be empowered to rescue the petrified fossil material, usually teeth, that is retained in the rotary pan concentrates and which is seen during their sorting.* *In the event of the uncovering of fossil bones, or fortuitously-preserved very shelly beds, which on consultation are deemed to be significant finds, a professional palaeontologist must be appointed to excavate the fossil bones and sample the shell beds. Said palaeontologist must also undertake the recording of the stratigraphic context and sedimentary geometry of the exposure and the compilation of the report to SAHRA and the relevant curatorial institution, e.g. the IZIKO S.A. Museum.* *A contribution to mitigation which is of great importance is the creation of a systematic archive of the pit and trench exposures over the duration of the prospecting, and later possible mining. With modern technology such as smartphones and cameras capable of recording high-resolution images inexpensively, accompanied by GPS positioning, and freely available software that enables the stitching together of image mosaics of the pit faces, the creation of systematic records of the pit faces is now greatly facilitated. Involving the Project Geologist, or perhaps a student doing fieldwork for a thesis, a systematic archive of the pit and trench exposures will be a significant positive contribution to the geoscience and geoheritage of the Namaqualand coastal-plain formations in this area.* *In this endeavour of diligent mitigation this consulting palaeontologist/stratigrapher can play a collaborating role in assisting with the interpretation of the exposures and identifying emailed images of fossil shells on an ad hoc basis. Also in this context, in co-operation and liaison with the Project Geologist, it may be mutually beneficial that the consulting palaeontologist carry out field inspections of the large prospecting trenches. Involving a day or two of fieldwork, the aim of field inspection is to examine*		

	the various formations exposed in the excavations, recording context and geometry, any shell fossil content, take fossil samples, and contribute to the archive of the exposures. *The proposed mitigation actions for the prospecting programme are relatively easily accomplished and their implementation will result in a positive impact for palaeontology arising from the proposed prospecting operation."*		

11 ENVIRONMENTAL IMPACT STATEMENT

11.1 Summary of the key findings of the environmental impact assessment

The significance ratings of impacts after mitigation on the key aspects of the "preferred alternative" and the "no go" alternative are shown per phase in the following tables.

Table 13: Significance Ratings of Impacts after Mitigation during Construction Phase

IMPACTS AND ASPECTS	PREFERRED AND ONLY ALTERNATIVE - RISKS	NO-GO ALTERNATIVE
1. SOIL EROSION AND COMPACTION: The clearing of areas for new waste dumps, tailings and extensions, including for logistics will result in the removal of existing vegetation and topsoil, which will disturb the soil increasing the potential for soil erosion by wind and loss of soil in the event of rainfall. Soil compaction will result from ongoing repeated use of access tracks.	**Low**	**NO IMPACT**
2. WATER RESOURCES (QUALITY & QUANTITY): Potable water from the Municipality will be trucked in and stored in water tanks. Sea water will be pumped from the inter-tidal zone and used (with recycling) for the processing of materials. There are no permanent surface water features on-site that could be impacted on.	**Very Low**	**NO IMPACT**
2. LIMITED LOSS OF NATURAL VEGETATION AND ECOLOGICAL FUNCTIONING IN AREA No section of the site is classified as a Critical Biodiversity Area or Ecological Support Area. The salt pan is classified as a NFEPA Wetland.	**Low**	**NO IMPACT**
3. POTENTIAL FOR SOIL CONTAMINATION AND WASTE MANAGEMENT DURING CONSTRUCTION PHASE Spillage of oils, waste water, refuge and other waste generated by construction activities.	**Low**	**NO IMPACT**
5. VISUAL INTRUSION: Caused by machinery, topsoil stockpiles, cleared areas, and movement of trucks on site during preparation of site establishment.	**Low**	**NO IMPACT**
6. EMISSIONS (DUST, VEHICLES & NOISE): Noise and dust will be created by prospecting equipment (e.g. front-end loaders) and vehicles, which will emit Greenhouse Gases.	**Very low**	**NO IMPACT**
7. ARCHAEOLOGICAL RESOURCES Direct impacts to archaeological resources would occur primarily during the construction phase in terms of stone age sites and the copper railway (e.g. if an excavator drives beyond the demarcated area during construction).	**Low**	**NO IMPACT**
8 .GRAVES Impacts to graves could occur during the construction phase.	**Medium**	**NO IMPACT**
9. CULTURAL LANDSCAPES The density of archaeological resources means that the landscape is also a precolonial cultural landscape.	**Low**	**NO IMPACT**
10. PALAEONTOLOGICAL IMPACTS The impact on paleontological resources takes place during all earthmoving activities. 1. Loss of fossil bones from excavations in the marine Avontuur, Hondeklipbaai and Curlew Strand formations.	**1. Medium**	**NO IMPACT**

2. Loss of fossil bones from excavations in the aeolian formations, included pedocretes and pan deposits. 3. Loss of fossil shells from excavations in the Avontuur and Hondeklipbaai formations. 4. Loss of fossil shells from excavations in the marine Curlew Strand Formation raised beaches.	**2. Medium** **3. Medium** **4. Medium**	
12. CREATION OF EMPLOYMENT & JOB SECURITY WITH LOCAL AND REGIONAL ECONOMIC SPIN-OFFS	**Medium (+)**	**NO IMPACT**

Table 14: Significance Ratings of Impacts <u>after Mitigation</u> during Operational Phase

IMPACTS AND ASPECTS	PREFERRED AND ONLY ALTERNATIVE - RISKS	NO-GO ALTERNATIVE
1. CHANGE IN TOPOGRAPHY: The change in topography from prospecting activities would be slight depressions created in the landscape. These depressions would be minimal as only 1% is taken for final recovery. The tailings are returned to the trenches for backfilling. The 1% will backfilled in the historical pit, and will fill 10% of this historical excavation, should there be 10 sample trenches.	**Low**	**NO IMPACT**
2. SOIL EROSION & SOIL COMPACTION: The potential for soil erosion by wind and storm water run-off; soil compaction from repeated use of access tracks.	**Low**	**NO IMPACT**
3. WATER RESOURCES (QUALITY & QUANTITY): Potable water from the Municipality will be trucked in and stored in water tanks. Sea water will be pumped from the inter-tidal zone and used (with recycled) for process materials. There are no permanent surface water features on site that could be impacted on.	**Very Low**	**NO IMPACT**
4. LIMITED LOSS OF NATURAL VEGETATION AND ECOLOGICAL FUNCTIONING NATURAL AND/OR PREVIOUSLY DISTURBED AREAS: The proposed prospecting area footprint will result in an impact on localized ecological functioning, although limited as: bulk sampling, prospecting and mining has already occurred in some places; the tailing storage facility will be situated in an historically excavated areas; access and haul roads exist; and the site camp area will also be on a disturbed area. Transport of materials will be along existing access tracks resulting in little impact on ecological functioning at a local level during the operation phase. The machinery and trucks will continue to disturb local fauna, already accustomed to the existing mining activities. No section of the site is classified as a Critical Biodiversity Area or Ecological Support Area. The ephemeral salt pan is classified as a NFEPA Wetland.	**Medium-Low**	**NO IMPACT**
5. POTENTIAL FOR SOIL CONTAMINATION, AND WASTE MANAGEMENT DURING OPERATIONAL PHASE: Tailings are to be collected in the tailings storage facility located in the old excavation; overburden; industrial waste (hazardous wastes, oil & grease); and domestic waste	**Low**	**NO IMPACT**
6. VISUAL INTRUSION: Caused by the machinery, topsoil and overburden stockpiles, cleared areas, and movement of trucks on site.	**Very Low**	**NO IMPACT**
7. EMISSIONS (DUST, VEHICLES & NOISE):	**Low**	**NO IMPACT**

Noise and dust will be created by the prospecting and processing activities; from the mining equipment (e.g. front-end loaders) and hauling vehicles that also emit Greenhouse Gases.		
8. ARCHAEOLOGICAL RESOURCES Direct impacts to archaeological resources would occur primarily during the construction phase in terms of stone age sites and the copper railway (e.g. if an excavator drives beyond the demarcated area during construction). Archaeological resources are fragile and very easily damaged or destroyed, especially in a landscape prone to erosion when the surface is disturbed. These sites have the potential to provide much scientific information on the past inhabitants of the area.	**Low**	**NO IMPACT**
9. GRAVES Impacts to graves could occur during the construction phase. It is possible that graves could be found during excavation.	**Medium**	**NO IMPACT**
10. CULTURAL LANDSCAPES The density of archaeological resources means that the landscape is also a precolonial cultural landscape. The cultural landscape can be easily affected by visual intrusion from inappropriate development. The proposed project is consistent with the past mining and prospecting activities that have happened in the area.	**Low**	**NO IMPACT**
11. PALAEONTOLOGICAL IMPACTS The impact on paleontological resources takes place during all earthmoving activities. 1. Loss of fossil bones from excavations in the marine Avontuur, Hondeklipbaai and Curlew Strand formations. 2. Loss of fossil bones from excavations in the aeolian formations, included pedocretes and pan deposits. 3. Loss of fossil shells from excavations in the Avontuur and Hondeklipbaai formations. 4. Loss of fossil shells from excavations in the marine Curlew Strand Formation raised beaches.	**1. Medium** **2. Medium** **3. Medium** **4. Medium**	**NO IMPACT**
12. CREATION OF EMPLOYMENT & JOB SECURITY WITH LOCAL AND REGIONAL ECONOMIC SPIN-OFFS	**Medium (+)**	**Medium (-)**

All of the negative identified impacts will occur for a limited period and the extent of the negative impacts will be localised. All of the identified impacts can be suitably mitigated. There is a correlation between cumulative impacts post-mitigation, and the significance rating of impacts after mitigation as indicated in **Appendix E, page 366.**

11.2 Final Site Map

Refer to Figure 1, Figure 2 and Figure 3 above for the location of the prospecting areas that comprise this Prospecting Right Application.

11.3 Summary of the positive and negative implications and risks of the proposed activity and identified alternatives

Refer to Section 11.1 above, and Table 13 and Table 14.

11.4 Proposed Impact Management Objectives and the impact management outcomes for inclusion in the EMPr

11.4.1 Management Objectives

The proposed impact management objectives are listed below:

- Objective 1 - To create a safe and rehabilitated post-prospecting environment.
  - Ensure safe prospecting area with no potentially dangerous areas like deep excavations and unauthorised access.
  - Topsoil to be stockpiled and replaced during decommissioning and closure, and rehabilitation.
- Objective 2 - To minimise pollution or degradation of the environment
  - Provide sufficient information and guidance to plan the diamond prospecting activities in a manner that would reduce impacts as far as practically possible.
  - Limit residual environmental impact on surface water, groundwater, coastal areas and ocean, the salt pan and soil by ensuring that no fuel or oil spills occur in the prospecting area causing contamination.
  - Access potable water in a sustainable manner from the municipality.
  - Access and use of sea water in a sustainable manner and discarding of water and waste due to filtration as per approved methodology.
  - Ensure that no solid waste or rubble is dumped on the site.
  - Ensure that portable toilets are used in places far from the logistics area, and at the Site Camp. A Biozone System will be put in place for the grey water, and grey water shall be recycled for prospecting use where possible.
- Objective 3 – To minimise impacts on the community and to provide optimal post-prospecting social opportunities
  - Ensure that workers remain within the prospecting right area.
  - Operate during normal working hours only.
  - Minimise the generation of noise and dust.
  - Respond rapidly to any complaints received.
  - Minimal negative aesthetic impact.
  - Optimised benefits for the social environment.

11.4.2 Outcomes

- By providing sufficient information to strategically plan the prospecting activities, unnecessary social and environmental impacts be avoided.
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.
- Provide a management plan that is effective and practical for implementation.
- Through the implementation of the proposed mitigation measures it is anticipated that the identified social and environmental impacts can be managed and mitigated effectively.
- Noise generation can be managed through consultation and restriction of operating hours and by maintaining equipment and applying noise abatement equipment if necessary.
- Visual intrusion can be managed through natural vegetation or shade cloth, etc.
- Dust fall can be managed by reducing driving speeds when driving on unpaved roads.
- Wildlife disturbance and clearance of vegetation will be limited to the absolute minimum required and disturbed areas will be re-vegetated with locally indigenous species as soon as possible.
- Surface water and groundwater contamination by hydrocarbons can be managed by conducting proper vehicle maintenance, refuelling with care to minimise the chance of spillages and by having a spill kit available on each site.
- Impacts to the salt pan can be managed by limiting prospecting areas to the minimal required area.

11.5 Final Proposed Alternatives

Refer to Section 6.

11.6 Aspects for inclusion as conditions of the authorisation

- All prospecting and rehabilitation are to be conducted as per the approved EMPr, and Rehabilitation, Decommissioning and Closure Plan (**Appendix F, page 403**).
- Concurrent prospecting and rehabilitation must be undertaken in the designated prospecting blocks.
- The proposed prospecting area must be clearly demarcated with semi-permanent markers.
- The upper 50cm of soil must be removed and stockpiled to be returned after prospecting by spreading evenly over impacted areas.
- Eradicate all alien vegetation in the area during and regularly after prospecting.
- The Applicant must appoint a suitably qualified ECO who will be responsible for ensuring compliance with the requirements of the EMPr during the prospecting operation and decommissioning.
    - The ECO must:
        - Inspect the site and record compliance with the EMPr;
        - Inform key, on-site staff of their roles and responsibilities in terms of the EMPr;
        - Ensure that all activities on site are undertaken in accordance with the EMPr;
        - Immediately notify the prospecting operator of any non-compliance with the EMPr, or any other issues of environmental concern.

The following recommendations are referenced from the Heritage Impact Assessment (Appendix D), page 199:

- Accurate mapping of each excavation area (test pits and bulk samples) must be compiled prior to implementation. These maps must be submitted to SAHRA via SAHRIS for the record and must indicate the positions of:
    - All archaeological sites of Grade GPB or higher;
    - The excavation locations;
    - The topsoil and overburden stockpile locations;
    - The maximum work area required around the above; and
    - The route proposed for access.
- A chance finds procedure for the protection and reporting of fossils needs to be in place (see the palaeontological specialist study for details). Fossils should be reported to SAHRA (phone 021 462 4502) and/or a palaeontologist.
- A chance finds procedure for the protection and reporting of human remains needs to be in place. Archaeological human remains should be reported to SAHRA (phone 021 462 4502) and/or an archaeologist.

The following recommendations are made in the Paleontological Impact Assessment (Appendix D), page 315):

- Prospecting personnel to be alert for rare fossil bones and follow “Fossil Finds Procedure”.
- Cease construction on the discovery of fossil bones and protect fossils from further damage.
- Contact appointed palaeontologist providing information and images.
- Palaeontologists will assess information and establish suitable responses, such as the importance of the find and recommendations for preservation, collection and record keeping.
- Prospecting personnel and ECO to be aware that a substantial temporary exposure of marine shelly beds may require sampling and recording.
- In the event of a large exposure of shell beds, the appointed palaeontologist must be notified and provided with information and images. Palaeontologists will assess information and establish suitable responses, such as the importance of the find and recommendations for sample collection and record keeping.

- Selected exposed fossiliferous sections in earthworks recorded and sampled by appointed palaeontologist.
- There will only be three prospecting pits open at any given time, one in the process of backfilling and rehabilitation, one that is operational for logging and one in the process of excavation. Similarly, only one bulk sample trench will be open at any given time. The duration of the prospecting is not specified, but presumably will take place over a few years.
- It is not feasible for a specialist to routinely monitor the excavation of the pits and trenches. Routine monitoring can only be achieved by the co-operation of the people on the ground. By these are meant personnel in supervisory/inspection roles, such as the geologist, surveyor, pit foremen, etc., who are willing and interested to look out for occurrences of fossils. A monitoring presence is critical for spotting a major "strike" of fossil bones and stopping further damaging excavation.
- It is recommended that a requirement to be alert for fossil materials and archaeological material uncovered during the prospecting be included in the Environmental Management Programme (EMPr) for the proposed prospecting operations. Under supervision of the Environmental Control Officer (ECO) and as part of Environmental and Health & Safety awareness training, personnel involved in the prospecting excavations must be instructed to be alert particularly for the occurrence of fossil bones. Due to the scarcity and importance of fossil bones in the affected formations it is important that such ephemeral opportunities to rescue fossil bones must not be overlooked. In the event of such discoveries the Fossil Finds Procedure (FFP) provided (Appendix 5 of the Paleontological Impact Assessment), for incorporation into the Environmental Management Programme for the proposed prospecting, must be followed.
- Fossils that were not seen during excavation may also be revealed when overburden spoil is returned to the excavation when backfilling. Fossil bones may also be noticed weathering out in the sides of old prospecting excavations, or exposed in the adjacent wind-eroded spoil heaps of excavated material.
- Very importantly, mine staff must be empowered to rescue the fossil material that appears sporadically, but quite routinely during excavation and must be promptly rescued from loss. For instance, as fossil tortoises are quite common, they should be in the category of "allowed" rescue by mine staff *cf*. isolated bone finds in the FFP below (Appendix 5 of the Paleontological Impact Assessment).
- As mentioned above, finds of petrified teeth in rotary pan concentrates have provided critical age constraints for the ages of formations. Importantly, the previous finds have come from small-scale, "hands-on" operations using rotary pans to concentrate heavy mineral pebbles, such as the proposed operation herein. Whereas, in the larger mines, high-throughput concentration systems using Heavy Media Separation (HMS) plants and X-ray Sortex-type machines to extract diamonds in a "hands off" security regime, the petrified fossils in the concentrate are not captured.
- It is highly recommended that mine staff must be empowered to rescue the petrified fossil material, usually teeth, that is retained in the rotary pan concentrates and which is seen during their sorting.
- In the event of the uncovering of fossil bones, or fortuitously-preserved very shelly beds, which on consultation are deemed to be significant finds, a professional palaeontologist must be appointed to excavate the fossil bones and sample the shell beds. The palaeontologist must also undertake the recording of the stratigraphic context and sedimentary geometry of the exposure and the compilation of the report to SAHRA and the relevant curatorial institution, *e.g*. the IZIKO S.A. Museum.
- A contribution to mitigation which is of great importance is the creation of a systematic archive of the pit and trench exposures over the duration of the prospecting, and later possible mining. With modern technology such as smartphones and cameras capable of recording high-resolution images inexpensively, accompanied by GPS positioning, and freely available software that enables the stitching together of image mosaics of the pit faces, the creation of systematic records of the pit faces is now greatly facilitated. Involving the Project Geologist, or a student doing fieldwork for a thesis, a systematic archive of the pit and trench exposures will be a significant positive contribution to the geoscience and geoheritage of the Namaqualand coastal-plain formations in this area.
- In this endeavour of diligent mitigation this consulting palaeontologist/stratigrapher can play a collaborating role in assisting with the interpretation of the exposures and identifying emailed images of fossil shells on an *ad hoc* basis. Also in this context, in co-operation and liaison with the Project Geologist, it may be mutually beneficial that the consulting palaeontologist carry out field inspections of the large prospecting trenches. Involving a day or two of fieldwork, the aim of field inspection is to examine the

various formations exposed in the excavations, recording context and geometry, any shell fossil content, take fossil samples, and contribute to the archive of the exposures.
- The proposed mitigation actions for the prospecting programme are relatively easily accomplished and their implementation will result in a positive impact for palaeontology arising from the proposed prospecting operation.

11.7 Descriptions of any Assumptions, Uncertainties & Gaps in Knowledge

- The desk-top research included reference to the SANBI BGIS database map viewer for the various baseline environmental attributes, and any assumptions or gaps in knowledge expressed by SANBI in the provision of this information would be applicable to this information as referenced.
- It is assumed that the proposed mitigation measures as listed in this report and included in the EMPr will be implemented and adhered to. Mitigation measures are proposed which are considered reasonable and must be implemented in order for the outcome of the assessment to be accurate.
- It is assumed that the Rehabilitation, Decommissioning and Closure Plan (**Appendix F, page 403**) and any annual rehabilitation plans as part of production, will be implemented and adhered to.
- Department of Water Affairs (DWA) will assess the Water Use Application or General Authorisation (if required) and the decision to grant or refuse the license with any conditions of the WULA that needs to be implemented by the Applicant will be determined by DWA.

11.8 Reasoned opinion as to whether the proposed activity should or should not be authorised

11.8.1 Reasons why the activity should be authorized or not

It is the opinion of the EAP that the proposed prospecting right activity should be authorised. In reaching this conclusion the EAP has considered that:

- The "preferred alternative" takes into account location alternatives, activity alternatives, layout alternatives, technology alternatives and operational alternatives.
- The approach taken is that it is preferable to avoid significant negative environmental impacts, wherever possible. There are no significant environmental impacts associated with the proposed activity.
- The site is not located in a Critical Biodiversity Area or Ecological Support Area. The salt pan is a NFEPA wetland. It is the opinion of the EAP that the underlying biodiversity objectives and ecological functioning will not be compromised, subject to the strict adherence to the EMPr (**section 15, page 100**) and Rehabilitation, Decommissioning and Closure Plan (**Appendix F, page 403**).
- The activity has been assessed to have a positive socio-economic impact, especially in terms of the creation of employment and the provision of diamonds for the local international market.
- Provided the recommended mitigation measures are implemented in an environmentally sound manner and prospecting activities are managed in accordance with the stipulations of the EMPr, and Rehabilitation, Decommissioning and Closure Plan (**Appendix F, page 403**), the potential negative impacts associated with the implementation of the preferred alternative can be reduced to acceptable levels.

11.9 Conditions that must be included in the authorization

11.9.1 Specific conditions to be included into the compilation and approval of EMPr

As per section 11.6 above:

- All prospecting and rehabilitation to be conducted as per the approved EMPr, and Rehabilitation, Decommissioning and Closure Plan (**Appendix F, page 403**).
- Concurrent prospecting and rehabilitation must be undertaken in the designated prospecting areas.
- Waste water and tailings will be collected in a tailings dam from where the water will be re-used, if possible.
- Solid waste shall be dumped in the Municipal landfill on a regular basis.

- The prospecting operator must appoint a suitably qualified ECO who will be responsible for ensuring compliance with the requirements of the EMPr during the prospecting operation and decommissioning.
    - The ECO must:
        - Inspect the site and record compliance with the EMPr;
        - Inform key, on-site staff of their roles and responsibilities in terms of the EMPr;
        - Ensure that all activities on site are undertaken in accordance with the EMPr;
        - Immediately notify the mine operator of any non-compliance with the EMPr, or any other issues of environmental concern.
- Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and SAHRA must be contacted.
- The mine operation must follow an Integrated Waste Management approach. Control measures must be implemented to prevent pollution of any water resource or soil surface by oil, grease, fuel or chemicals. Appropriate pollution prevention measures must be implemented to prevent dust.
- A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers will be informed of the speed limit applicable to the length of the access road, where after the national speed limits will be applicable for hauling trucks. The access road will be maintained during operational activities.

11.9.2 Rehabilitation requirements

- Pit development will be the same as for trench development (Bulk Sampling), but on a much smaller scale. There will only ever be three prospecting pits open at any given time, one in the process of rehabilitation, one that is operational and one in the process of development and it is anticipated that no more than 30 such pits will be developed. After results are logged the pit will be backfilled immediately for security and safety reasons before the project is moved to the next pit position. In case of sudden closure of the project there will only be one open pit to be dealt with as part of final decommissioning and rehabilitation.
- The existing historical excavation is estimated at 50 000m³ at an average depth of 5 meters, which means that even if the maximum of 10 bulk samples is excavated only 10% of the excavation will be filled. Therefore, at final closure the floor of the excavation needs to be levelled and the sides sloped to create an even depression, or if prospecting advances to full scale mining then the excavation will remain for processing during mining activities.

11.10 Period for which the environmental authorisation is required

The authorisation is required for the duration of the Prospecting Right, which is a period of 5 years.

11.11 Undertaking

It is confirmed that the undertaking required to meet the requirements of this section is provided at the end of this report.

12 FINANCIAL PROVISION

12.1 Introduction

With the repeal of Section 41 of the MPRDA (Act 28 of 2002) that requires that the owner of a mine must make financial provision for the remediation of environmental damage, regulations pertaining to the financial provision for prospecting, exploration, prospecting or production operations under section 44, read with sections 24 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) were issued in 2015.

According to regulation 7 the applicant or holder of a right or permit must ensure that the financial provision is, at any given time, equal to the sum of the actual costs of implementing the plans and report contemplated in regulation 6 and regulation 11(1). In terms of regulation 11(1) the holder of a right or permit must ensure that a review is undertaken of the requirements for:

(a) annual rehabilitation, as reflected in an annual rehabilitation plan;
(b) rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations as reflected in a final rehabilitation, decommissioning and mine closure plan; and,
(c) remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water, as reflected in an environmental risk assessment report.

Financial provision in terms of reg. 6(c) are covered by the requirements for the actual costs of implementation of the measures required for rehabilitation, decommissioning and closure of the prospecting operations at the end of the life of operations as reflected in the Rehabilitation, Decommissioning and Mine closure plan in terms of regulation 6(b) and attached as **Appendix F, page 403**.

The calculation below is for the expanded scale of operations as part of the prospecting right. The financial guarantee for current operations is already in place with DMR as part of approved closure plans and will be upgraded as part of this environmental authorization and reviewed annually.

Table 15: Table of a cost estimate of the expenditure to be incurred for each phase of the pro-posed prospecting operation

ACTIVITY	Rate	Expenditure									
		Year 1		Year 2		Year 3		Year 4		Year 5	
		Qty	Amount	Qty	Amount	Qty	Amount	Qty	Amount	Qty	Amount
General expenditure year 1 to 5											
Prospecting fees	R1-R3	1052	R1 052	1052	R1 578	1052	R2 104	1052	R2 630	1052	R3 156
Compliance reporting MPRDA & NEMA	R7 500	1	R7 500	1	R7 500	1	R7 500	1	R7 500	1	R7 500
Project management	R100 000	1	R100 000	1	R100 000	1	R100 000	1	R100 000	1	R100 000
Miscellaneous	R25 000	2	R50 000	1	R25 000	1	R25 000	1	R25 000	2	R50 000
PHASE 1 Literature Study Imagery Analysis Geological Mapping Geophysical Survey (Ground Resistivity measurements)											
Geological services	R50 000	1	R50 000		R0		R0		R0		R0
Report Writing	R25 000	1	R25 000		R0		R0		R0		R0
PHASE 2 Prospecting pits											
Earthmoving Overburden per m^3	R26	0	R0	5880	R152 880	2940	R76 440	0	R0	0	R0
Processing per m^3	R62	0	R0	200	R12 400	100	R6 200	0	R0	0	R0
Geological services	R100 000	0	R0	0	R0	1	R100 000	0	R0	0	R0
Report Writing	R25 000	0	R0	0	R0	1	R25 000	0	R0	0	R0
PHASE 3 Bulk sampling (Trenches)											
Earthmoving Overburden per m^3	R26	0	R0	0	R0	45800	R1 190 800	91700	R2 384 200	0	R0
Processing per m^3	R62	0	R0	0	R0	800	R49 600	1700	R105 400	0	R0
Geological services	R50 000	0	R0	0	R0	0	R0	1	R50 000	0	R0
Report Writing	R25 000	0	R0	0	R0	0	R0	1	R25 000	0	R0
PHASE 4 and 5 Resource Estimation and decommissioning											
Metallurgy	R50 000	0	R0	0	R0	0	R0	0	R0	1	R50 000
Consulting services	R100 000	0	R0	0	R0	0	R0	0	R0	1	R100 000
Final rehabilitation decommisioning and closure	R250 000	0	R0	0	R0	0	R0	0	R0	1	R250 000
Annual Total		**R233 552**		**R299 358**		**R1 582 644**		**R2 699 730**		**R560 656**	
5 Year Total		**R5 375 940**									

The following financial guarantees are already in place:

As part of the Prospecting Work Programme, the applicant needs to sign a resolution stating that financial arrangements have been made. This is then submitted to DMR.

12.2 Explain how the aforesaid amount was derived

According to regulation 6, an Applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for:

(a) annual rehabilitation, as reflected in an annual rehabilitation plan;
(b) rehabilitation, decommissioning and closure of the prospecting, exploration, prospecting or production operations at the end of the life of operations, as reflected in a final rehabilitation, decommissioning and mine closure plan; and,
(c) remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water, as reflected in an environmental risk assessment report.

12.3 Confirm that this amount can be provided for from operating expenditure

The amount needed for the implementation of the rehabilitation, decommissioning and closure plan will be provided to DMR in the form of a bank guarantee and the plan will be revised on an annual basis in terms of regulation 11(1) of the NEMA Financial Regulations 2015.

Provision for implementation of the annual rehabilitation plan is to be provided as part of the environmental audit report in terms of Regulation 34 (1) (b) of the NEMA EIA Regulations (2014) and will be provided as part of the operational budget. Proof of access to the necessary fund will be provided as part of the Prospecting Works Plan (PWP) together with proof of access to the necessary financial resources.

13 DEVIATIONS FROM THE APPROVED SCOPING REPORT AND PLAN OF STUDY

13.1 Deviations from the methodology used in determining the significance of potential environmental impacts and risks

The need for a biodiversity assessment will be addressed during the Mining Right Application process to follow the prospecting phase, should the mineral resource prove viable.

13.2 Motivation for the deviation

The biodiversity specialist was unable to meet the stipulated deadline despite taking a period of 3 months, which included waiting for the rainfall season to commence. The specialist comment is therefore not included in this DEIR.

14 Other Information required by the competent Authority

14.1 Compliance with the provisions of sections 24(4) (a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998)

The EIA report must include the: -

(1) Impact on the socio-economic conditions of any directly affected person

Potential socio-economic impacts has been addressed in Section 9 & 11. High-level socio-economic impacts and mitigation measures are included in Table 14.

A full consultation process is being implemented during the environmental authorisation process. The purpose of the consultation is to provide affected and interested persons with the opportunity to raise any potential concerns. Comments received or concerns raised in the scoping process was addressed as part of the Final SR and the comments received as part of the DEIAR are included in Section 7 and Appendix B, page 132.

2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act

A Specialist Heritage Impact Assessment and Palaeontological Impact Assessment (attached at **Appendix D, page 199**) have been prepared. Both reports will be submitted to the South African Heritage Resources Agency (SAHRA) during the 30-day public participation comment period. Recommendations and conclusions from **Appendix D** are included in Section 10, page 83 above, and any additional measures stipulated by SAHRA will be included in the Final EIA Report, EMPr (Part B) on page 100, Impact Table (**Appendix E, page 366**) and Closure Plan (**Appendix F, page 403**).

14.2 Other matters required in terms of sections 24(4) (a) and (b) of the Act

Section 2 of NEMA sets out a number of principles (see section 5.7 above) that are relevant to the:

- EIA process, such as:
  - Adopt a risk-averse and cautious approach;
  - Anticipate and prevent or minimise negative impacts;
  - Pursue integrated environmental management;
  - Involve stakeholders in the process; and
  - Consider the social, economic and environmental impacts of activities; and regarding the
- A project such as:
  - Place people and their needs at the forefront of concern and serve their needs equitably;
  - Ensure development is sustainable, minimises disturbance of ecosystems and landscapes, pollution and waste, achieves responsible use of non-renewable resources and sustainable exploitation of renewable resources;
  - Assume responsibility for project impacts throughout its life cycle; and the
  - Polluter pays for remediation costs.

This EIA process complies with the principles set out in section 2 of NEMA through its adherence to the EIA Regulations 2014 (as amended), and associated guidelines, which set out clear requirements for, inter alia, impact assessment and stakeholder involvement, and through the assessment of impacts and identification of mitigation measures during the Impact Assessment Phase.

- The Preferred and Only Alternative is considered in the Impact Assessment Phase (see Section 6) and the Impact Tables attached at **Appendix E, page 366**.
- The potential social and environmental impacts of the project will be identified, assessed and evaluated using the impact assessment methodology (Section 9.4) to understand the significance of each positive and negative impact. The Impact Tables are attached at **Appendix E, page 366**.
- An EMPr has been compiled (Part B) of this report to ensure that potential environmental impacts are prevented or minimised.
- Mitigation measures will be recommended in the Impact Assessment Phase to allow for unavoidable impacts on the environment and people's environmental rights to be minimized and remedied.

- Opportunities for public participation are allowed in the EIA process.
- The needs and interests of I&APs will be taken into account.
- All relevant information is being made available for public comment before submission to DMR, as part of the public participation process.
- Some comments were received on the Draft Scoping Report and should comments be received from the relevant government departments and I&APs in the EIA phase, these comments will inform the decisions taken by DMR regarding the Environmental Authorisation of the project.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

15 DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

15.1 Details of the EAP

Refer to Section 1.1 In Part A above.

15.2 Description of the Aspects of the Activity

Refer to Section 9.10 and Table 9 above.

15.3 Composite Map

This is addressed in Section 8 in each environmental baseline map, in conjunction with the Mine Site Plans in Figure 7 and Figure 8.

15.4 Description of Impact Management objectives including Management Statements

This is addressed in Section 11.4.1 in Part A above.

15.5 Determination of Impact management objectives including management statements

15.5.1 Determination of Closure Objectives

Objective 1 - To create a safe and healthy post-prospecting environment

- Safe excavations
  - Slope stability of remaining excavation
  - No potentially dangerous areas secured if required
- Limited residual environmental impact
  - Develop a landscape that reduces the requirement for long term monitoring and management
  - No surface and/or groundwater contamination
  - Waste management practices not creating or leaving legacies

Objective 2 - To create a stable, free draining post prospecting landform, which is compatible with the surrounding landscape

- Economically viable and sustainable land, as close as possible to its natural state.
  - Prepare area to promote natural re-establishment of vegetation that is self-sustaining, perpetual and provides a sustainable habitat for local fauna and successive flora species
  - Prevent long term changes in land use by implementing prompt rehabilitation and maintenance of disturbances when possible as part of annual rehabilitation plan.
- Stable, free draining post prospecting landform
  - Prevent alteration or diverting natural drainage lines and reduced natural runoff.
  - Prevent concentration of runoff, mixing of clean runoff with contaminated runoff and creation of large open water bodies.

Objective 3 – To provide optimal post-prospecting social opportunities

- Optimised benefits for the social environment
  - Positive and transparent relationships with stakeholders and maintaining communication channels, providing stakeholders including government authorities with relevant information as per legislative requirements.
  - Undertaking environmental management according to approved EMPr and Closure plans and regular auditing of the environmental management system.
- Minimal negative aesthetic impact
  - Mitigate the nuisance effects of air emissions (dust), visual intrusion and the cumulative effect of

an increase in the ambient noise levels
- Prevent disturbance of archaeological sites and implement mitigating measures according to the heritage and paleontological assessment.

15.5.2 The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity

The mitigation measures contained in Table 16 and **Appendix E, page 366** provide the measures for managing any environmental damage, pollution, water or ecological degradation.

In addition, an Environmental Control Officer is required to audit the mine on an annual basis, to ensure that mitigation measures are employed correctly and continuously.

15.5.3 Potential risk of Acid Mine Drainage

No acid mine drainage associated with diamond prospecting and tailings.

15.5.4 Steps taken to investigate, assess, and evaluate the impact of acid mine drainage

Not applicable.

15.5.5 Engineering or mine design solutions to be implemented to avoid or remedy acid mine drainage

Not applicable.

15.5.6 Measures that will be put in place to remedy any residual or cumulative impact that may result from acid mine drainage

Not applicable.

15.5.7 Volumes and rate of water use required for the prospecting operation

Process water supply is to be sourced from the sea located approximately 250m from the processing plant. Sea water will be extracted from inter-tidal pools with a portable petrol-driven mono pump via a 50mm surface pipeline and the water will be stored in 3 x 10 0001 plastic tanks. No permanent or temporary infrastructure will be required at the intake. The sea water will be returned from the dewatering screen for recycling.

Potable water will be trucked in and stored in water tanks for domestic consumption

No volumes are currently available.

15.5.8 Has a water use license been applied for?

The WULA or General Authorisation will be submitted as a separate application if required for prospecting works near the wetland areas and salt pan. Refer to Section 8.1.8.1 above.

15.6 Impacts to be mitigated in their respective phases

Table 16: Measures to rehabilitate the environment affected by the undertaking of any listed activity

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Site Access & Site Establishment	**CONSTRUCTION**	TOTAL EXTENT OF AREA REQUIRED FOR PROSPECTING Tailings storage Facility and processing will be located in historical pit. Total footprint from 30 Prospecting pits: 88m² X 30 = 2640m² (0.2640Ha) Total surface disturbance: 5 Trenches: 0.5Ha X 5 = 2.5Ha; 10 Trenches = 5Ha, depending on findings from pit sampling.	**Impact 1: Soil erosion & soil compaction** • After clearing, the affected area shall be stabilised to prevent any erosion or sediment runoff. Stabilized areas shall be demarcated accordingly. • Incremental clearing of ground cover should take place to avoid unnecessary exposed surfaces. • Reasonable measures must be undertaken to ensure that any exposed areas are adequately protected against the wind and potential storm water run-off. • Top soil shall be removed separately and stockpiled separately from other soil base layers. • The stockpile areas for topsoil are temporary as they will be re-used on a cut and fill basis. • Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material. • Topsoil storage areas must be convex and should not exceed 2m in height. • Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g. by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction. • In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed by a bulldozer for more than 50 metres. Trucks may not be driven over the stockpiles. • Reduce drop height of material to a minimum. • Temporarily halt material handling in windy conditions. • A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers using the access road and entering the site will be informed of the speed limit. • Soil erosion on haul roads is to be regularly monitored and repaired. • Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation.	NEMA Section 2 Principles Environmental Authorisation	Start of activity and continuous as prospecting progresses over the site during construction period (site establishment activities) Upon cessation of each activity where applicable. Immediately in the event of spills

			• Tailings may only be located on the old excavated pit to reduce impacts on undisturbed areas. **Impact 2: Water Resources** <u>Implement and follow water saving procedures and methodologies.</u> • Only the allowed amount may be used from the municipal supply. • Place oil traps under stationary machinery, only re-fuel machines at fuelling station, construct structures to trap fuel spills at fuelling station, immediately clean oil and fuel spills and dispose contaminated material (soil, etc.) at licensed sites only. • Take care that temporary onsite sanitation facilities are well maintained and serviced regularly. • Draw-up and strictly enforce procedures for the storage, handling and transport of different hazardous materials. • Ensure vehicles and equipment are in good working order and drivers and operators are properly trained. • Ensure that good housekeeping rules are applied. • Minimise storage of hazardous substances onsite during construction. • Service and refuel construction vehicles at a fit-for-purpose facility to minimise pollution risks. • Waste materials generated on site must be stored in suitable lidded containers and removed off site to a suitable disposal facility. • Waste separation must be undertaken if practical for recycling. • Provide all workers with environmental awareness training and comply with the requirements of the EMPr. • Provide mobile ablution facilities • Drinking water to be brought on site as per existing practices. • Clear demarcation of access areas, close to salt pan. <u>Waste water (i.e., including process water and grey water)</u> • A biozone system will be used to treat effluent (containerised). • By keeping contaminated and clean water separate and establishing controlled runoff washing bays, the flow and end destination of decontamination washing water will be controlled. • Although erosion and runoff are natural processes it should be managed by maintaining topsoil in any areas not in use and maintaining maximum existing vegetation coverage. • Slow storm water runoff with contoured, low-gradient drains and channels.		

			Storm water diversion and erosion control contour berms separate clean and contaminated water systems around the pit and infrastructure areas.		
			Impact 3: Impact on biodiversity • Demarcate the sample pit, sample trench, and topsoil stockpiles using green shade cloth to contain the area of disturbance. • Leave a 50cm gap between the bottom of the shade cloth and the ground to allow for the movement of small fauna. • Demarcate the sections of existing tracks that may be used to access each sample pit or trench, including the area for turning circles of vehicles. • Conduct a "search and rescue" operation to identify any plants of conservation concern prior to clearing each prospecting pit (footprint of each sample pit is 88m²); and for the increased area required for a prospecting trench, should the sample pit provide an indication of a viable mineral resource for further bulk sampling (0.5Ha), • No indigenous plants outside of the demarcated work areas may be damaged or removed. • Remove alien invasive vegetation if required and ensure ongoing alien vegetation clearing in the sampling pit or trench . • The noise and vibration caused by the earthmoving equipment will disturb mobile fauna that should move away when activities commence. Should any animals be encountered these should be relocated by a suitably trained nature conservation officer. • Demarcate areas for the sample pits and trenches and ensure that all other adjacent areas are regarded as no-go areas. • A 10m buffer must be left between the salt pan and any pits and trenches where no excavation may take place. • The Closure plan must be implemented.		
			Impact 4: Contamination & Pollution • Oils and lubricants must be stored within sealed containment structures. • Any mechanical equipment maintenance must be undertaken on drip trays or UPVC sheets to prevent spills/ leaks onto the soil. • When not in use, a drip tray must be placed beneath mechanical equipment and vehicles. • Machinery must be kept in good working order and regularly inspected for leaks. • A spill kit will be available on each site where mining activities are in progress.		

			• Any spillages will be cleaned up immediately. • Waste materials generated on site must be stored in suitable lidded containers and removed off site to a suitable disposal facility. • Waste separation must be undertaken. • Provide all workers with environmental awareness training. • Provide a bin at the site. • Regularly dispose of any solid waste at a municipal waste disposal site. • Ensure all workers comply with the requirements of the EMPr. • Provide mobile ablution facilities.		
			Impact 5: Visual landscape • The site shall be kept neat and tidy at all times. Equipment must be kept in designated areas and storing/stockpiling shall be kept orderly. • Mitigation of the visual impact by screening of prospecting pits or trenches with green shade cloth.		
			Impact 6: Emissions • The Applicant shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations. • The Applicant shall limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Sub clause 4.1 regarding "built-up" area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas. • Construction and demolition activities generating output of 85dB or more, shall be limited to normal working hours and not allowed during weekends to limit the impact of noise of neighbours. No amplified music shall be allowed on site. • Hauling vehicles shall adhere to municipal and provincial traffic regulations including speed limits. • Vehicles used on site for the construction related activities shall be maintained and in a good working condition so as to reduce emissions. • Engines shall be turned off when the vehicle is temporarily parked or stationery for long periods. • Stockpiles must be maintained (covered where necessary) to avoid wind erosion of the material. • Incremental clearing of ground cover should take place to avoid unnecessary exposed surfaces. • Health and safety equipment is required for workers.		

- The wetting of the roads helps reduce dust generation during transporting of processing materials.
- No amplified music should be allowed on site.
- Existing tracks will be used as haul roads and will only be upgraded to facilitate haul trucks by applying dust suppression and/or hardening compound such as Macadamite.
- On public roads the vehicles shall adhere to municipal and provincial traffic regulations including speed limits.
- Vehicles used on site for the construction related activities shall be maintained and in a good working condition so as to reduce emissions.
- Engines shall be turned off when the vehicle is temporarily parked or stationery for long periods

Impact 7: Archaeological Resources

<u>The following recommendations are made:</u>

Mandatory avoidance of some areas with 50m buffer, avoidance (with 50m buffer) or archaeological excavation of others

The assigned heritage grade and the nature of mitigation go hand in hand as shown in table below (taken from HIA). Many sites are very ephemeral and/or obviously lack cultural materials. These sites are graded GPC and require no further work.

Grade	Mitigation	Purpose of mitigation
GPC	One	No apparent cultural significance, no mitigation required.
GPB	Small sample	The small sample provides a record of the site and its contents with the main record anticipated to be of the shellfish. This sampling also serves as a test excavation to determine whether further excavations might be required. This would be in the event that the initial sample produces an elevated density of cultural materials. Some sites were allocated slightly more time because the chances of encountering cultural materials seemed higher from the initial surface examination. Note that as a precautionary measure in some large clusters of scatters (that might represent single site complexes) where only certain waypoints have been suggested for mitigation, all waypoints have been assigned the same grade so that if significant subsurface deposits are found the whole

		site will be available for potential further investigation.
GPA	Excavation	Sites where many cultural materials were evident on the surface were assigned a grade of GPA. These are sites with a medium-high local cultural significance because there is clearly much scientific data to be gained through their excavation. At these sites a fairly large area should be sampled.
IIIA	Avoidance and *in situ* protection	This grade was allocated to all finds related to the historic copper railway. The copper mining landscape is of very high local cultural significance and must not be disturbed by prospecting.

Sampling of sites graded GPB will entail excavation of at least one square meter, and more where this becomes warranted (i.e. if many cultural materials are found).

More significant sites were graded GPA and will need a larger scale excavation that samples a wider area and gathers valuable scientific data. This work would have to be done under a permit issued to the consulting archaeologist by SAHRA. It is noted, however, that the intention is to try and avoid as many archaeological sites as possible, so mitigation as described here will only be required for those sites that cannot be avoided.

For avoidance, buffers of 30 m around sites are required by SAHRA. To effect this, buffers of 50 m around the waypoints have been provided to account for the area of the site plus a buffer of at least 30 m for all waypoints of GPB or higher grading.

Management measures are also required. This will entail the careful planning by the developer of the project layout, both the test pitting phase and the bulk sampling phase. Maps should be prepared showing all areas that will require disturbance. These should be examined by an archaeologist and submitted to SAHRA for the record. Any mitigation required will need to be decided upon and commissioned. Prospecting work may not commence in the relevant areas until SAHRA has approved of the disturbance plan (if no impacts are expected) or the mitigation report.

Impact 8: Potential impacts on graves

There are no pre-construction mitigation measures that can be applied. However, provision needs to be made for the immediate protection and reporting of any accidental finds of human remains to an archaeologist for

			evaluation and rescue as necessary. The SAHRA protocols at the time for dealing with human remains will need to be followed.		
			Impact 9: Potential impacts on cultural landscapes The only mitigation measure suggested is to ensure that correct rehabilitation measures are applied. This measure has already been included into the project design.		
			Impact 10: Potential impacts on paleontological resources 1. Loss of fossil bones from excavations in the marine Avontuur, Hondeklipbaai and Curlew Strand formations. • Prospecting personnel to be alert for rare fossil bones and follow "Fossil Finds Procedure". • Cease construction on discovery of fossil bones and protect fossils from further damage. • Contact appointed palaeontologist providing information and images. • Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for preservation, collection and record keeping. 2. Loss of fossil bones from excavations in the aeolian formations, included pedocretes and pan deposits. • Prospecting personnel to be alert for rare fossil bones and follow "Fossil Finds Procedure". • Cease construction on discovery of fossil bones and protect fossils from further damage. • Contact appointed palaeontologist providing information and images. • Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for preservation, collection and record keeping. 3. Loss of fossil shells from excavations in the Avontuur and Hondeklipbaai formations. • Prospecting personnel and ECO to be aware that a substantial temporary exposure of marine shelly beds may require sampling and recording. • In the event of a large exposure of shell beds, the appointed palaeontologist must be notified and provided with information and images. Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for sample collection and record keeping. • Selected exposed fossiliferous sections in earthworks recorded and sampled by appointed palaeontologist.		

			4. Loss of fossil shells from excavations in the marine Curlew Strand Formation raised beaches. • Prospecting personnel and ECO to be aware that a substantial temporary exposure of marine shelly beds may require sampling and recording. • In the event of a large exposure of shell beds, the appointed palaeontologist must be notified and provided with information and images. Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for sample collection and record keeping. • Selected exposed fossiliferous sections in earthworks recorded and sampled by appointed palaeontologist.		
			Impact 11: Socio-economic • Employment of local previously disadvantaged labour wherever possible, with provision of training (upskilling)		
Prospecting in progress	**OPERATION**	TOTAL EXTENT OF AREA REQUIRED FOR PROSPECTING Tailings storage Facility and processing will be located in historical pit. Total footprint from 30 Prospecting pits: 88m² X 30 = 2640m² (0.2640Ha) Total surface disturbance: 5 Trenches: 0.5Ha X 5 = 2.5Ha; 10 Trenches = 5Ha, depending on findings from pit sampling.	**Impact 1: Change in Topography** • Pit development will be the same as for trench development (Bulk Sampling), but on a much smaller scale. There will only ever be three prospecting pits open at any given time, one in the process of rehabilitation, one that is operational and one in the process of development and it is anticipated that no more than 30 such pits will be developed. After results are logged the pit will be backfilled immediately for security and safety reasons before the project is moved to the next pit position. In case of sudden closure of the project there will only be one open pit to be dealt with as part of final decommissioning and rehabilitation. • The existing historical excavation is estimated at 50 000m³ at an average depth of 5 meters, which means that even if the maximum of 10 bulk samples is excavated only 10% of the excavation will be filled. Therefore, at final closure the floor of the excavation needs to be levelled and the sides sloped to create an even depression, or if prospecting advances to full scale mining then the excavation will remain for processing during mining activities.		
			Impact 2: Soil erosion & soil compaction • After clearing, the affected area shall be stabilised to prevent any erosion or sediment runoff. Stabilised areas shall be demarcated accordingly. • Incremental clearing of vegetation should take place to avoid unnecessary exposed surfaces. • Reasonable measures must be undertaken to ensure that any exposed areas are adequately protected against the wind and storm water run-off.	NEMA Section 2 Principles Environmental Authorisation	Start of activity and continuous as prospecting progresses over the site during operational period.

			• Reduce drop height of material to a minimum. • Temporarily halt material handling in windy conditions. • A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers using the access road and entering the site will be informed of the speed limit. • Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation. • The basic rehabilitation methodology will therefore strive to replicate the pre-prospecting topography, wherever possible, or at least not to increase overall slope gradients without emplacement of adequately designed erosion control or runoff diversion structures. • Provision must also be made for efficient storm water control to prevent erosion of roadways. • Soil erosion on haul roads is to be regularly monitored and repaired. • Top soil shall be removed separately and stockpiled separately from other soil base layers. • The stockpile areas for topsoil are temporary as they will be re-used on a cut and fill basis. • Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material. • Topsoil storage areas must be convex and should not exceed 2m in height. • Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g. by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction. • In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed by a bulldozer for more than 50 metres. Trucks may not be driven over the stockpiles. • Tailings may only be located on the old excavated pit to reduce impacts on undisturbed areas.		Upon cessation of each activity where applicable. Immediately in the event of spills.
			Impact 3: Water Resources <u>Implement and follow water saving procedures and methodologies.</u> • Only the allowed amount may be used from the municipal supply. • Place oil traps under stationary machinery, only re-fuel machines at fuelling station, construct structures to trap fuel spills at fuelling station, immediately clean oil and fuel spills and dispose contaminated material (soil, etc.) at licensed sites only.		

			• Take care that temporary onsite sanitation facilities are well maintained and serviced regularly. • Draw-up and strictly enforce procedures for the storage, handling and transport of different hazardous materials. • Ensure vehicles and equipment are in good working order and drivers and operators are properly trained. • Ensure that good housekeeping rules are applied. • Minimise storage of hazardous substances onsite during construction. • Service and refuel construction vehicles at a fit-for-purpose facility to minimise pollution risks. • Waste materials generated on site must be stored in suitable lidded containers and removed off site to a suitable disposal facility. • Waste separation must be undertaken if practical for recycling. • Provide all workers with environmental awareness training and comply with the requirements of the EMPr. • Provide mobile ablution facilities • Drinking water to be brought on site as per existing practices. • Clear demarcation of access areas, close to salt pan. <u>Waste water (i.e., including process water and grey water)</u> • A biozone system will be used to treat effluent (containerised). • By keeping contaminated and clean water separate and establishing controlled runoff washing bays, the flow and end destination of decontamination washing water will be controlled. • Although erosion and runoff are natural processes it should be managed by maintaining topsoil in any areas not in use and maintaining maximum existing vegetation coverage. • Slow storm water runoff with contoured, low-gradient drains and channels. • Storm water diversion and erosion control contour berms separate clean and contaminated water systems around the pit and infrastructure areas.		
			Impact 4: Impact on biodiversity • Demarcate the sample pit, sample trench, and topsoil stockpiles using green shade cloth to contain the area of disturbance. Leave a 50cm gap between the bottom of the shade cloth and the ground to allow for the movement of small fauna. • Demarcate the sections of existing tracks that may be used to access each sample pit or trench, including the area for turning circles of vehicles.		

			• Conduct a "search and rescue" operation to identify any plants of conservation concern prior to clearing each prospecting pit (footprint of each sample pit is 88m²); and for the increased area required for a prospecting trench, should the sample pit provide an indication of a viable mineral resource for further bulk sampling (0.5Ha), • No indigenous plants outside of the demarcated work areas may be damaged. • Remove alien invasive vegetation if required and ensure ongoing alien vegetation clearing in the sampling pit or trench . • The noise and vibration caused by the earthmoving equipment will disturb mobile fauna that should move away when activities commence. Should any animals be encountered these should be relocated by a suitably trained nature conservation officer. • Demarcate areas for the sample pits and trenches and ensure that all other adjacent areas are regarded as no-go areas. • The Closure plan must be implemented.		
			Impact 5: Contamination & Pollution <u>Tailings collected within the tailings storage facility in the old excavation</u>**.** • Sea-water used as part of processing will be collected in the tailings storage facility from where the water will be re-used if possible. <u>Overburden, cover, and/or "soft" material including topsoil</u> • Remove and stockpile 300mm topsoil in berms or heaps less than 1,5m high and turn soil or re-use every six months. • Remove and stockpile topsoil building platforms and stockpile areas prior to construction for use to restore disturbed areas. To ensure long-term stability, the restored soil cover should attempt to mimic the pre-mining distribution of soil texture and thickness. • Contaminated soil must be treated by first removing the source of contamination - removing the source of contamination should allow the system to recover without further clean-up required. • Petrochemical spillages to be collected in a drip tray and drum to store excavated spill affected soil for disposal at a registered facility or onsite treatment. • The most promising techniques for in on-site treatment involve bioremediation. Bioremediation involves the use of microorganisms to destroy hazardous contaminants. <u>Other non-specification waste</u>		

			• Any product stockpiles left or oversize boulders must be removed and used to backfill excavations. • Waste or rock material used as refill or landscaping, crushed for other applications, or otherwise dealt with responsibly. <u>Industrial waste (i.e. including hazardous wastes and oils and greases)</u> • Separation of wastes into classes will ensure that waste is disposed of safely and according to the correct procedure. In order to ensure that waste classes are kept in separate streams, people will be trained on the different waste classes. • Unwanted steel, sheet metal and equipment need to be stored in a demarcated salvage yard. • Recycling and reusing materials may reduce garbage haul fees or generate income through the sale of scrap metal and old equipment. • All steel structures and reinforcing will be discarded or sold as scrap. • All equipment and other items used during the prospecting operation needs to be removed from the site. • Used oils / hydrocarbons fuels / liquids are to be collected in sealed containers (stored on concrete slabs) and removed from site for recycling by a reputable company. • All waste in the temporary storage area for used lubrication products and other hazardous chemicals will be disposed of at a collection point from where it will be collected by a waste recycling company. • Mobile generators will supply electricity to the machinery. Generator bays will be constructed with the necessary pollution control measures (drip trays). • Clean out content of oil traps and dispose of waste at registered and purpose designed landfill sites. • Hydrocarbon contaminated sludge (collected in oil traps) - Removed from the oil traps and removed from site for recycling (if possible) or disposal at a suitably permitted facility. • All temporary waste storage areas need to be cleaned out and waste removed. • Tyres to be return to supplier or a company that uses old tyres for making door mats, shoes, swings, etc. • Batteries to be return to supplier or dispose at a permitted hazardous waste facility.		

			• Fluorescent tubes to be collected in sealed containers (stored on concrete slabs) and removed from site for disposal at a permitted hazardous waste facility. • Chemical containers to be returned to supplier or disposed of at a legal, permitted facility that is capable of disposing of the waste. (DO NOT sell chemical containers to workers or communities). • Laboratory waste (chemicals) - Returned to supplier or disposed of at a permitted facility that is capable of disposing of the waste. • Industrial chemicals (laboratory waste) - Returned to supplier or disposed of at a permitted facility that is capable of disposing of the waste. These liquid wastes cannot be disposed of on the waste dumps. <u>Domestic waste (i.e., waste that is generated from the accommodation and offices)</u> • Domestic waste - Separated at source into recyclable products. These must then be removed and recycled by recognised contractors. (Note that the mine is responsible for the waste from cradle to grave). • Disposal at a registered and officially permitted commercial or municipal landfill site is the most cost-effective option for materials that cannot be recycled. • Domestic waste generated by workers needs to be sorted and all biodegradable waste must be stored in separate drums provided for. • This biodegradable waste will be dumped in a landfill provided for onsite.		
			Impact 6: Visual landscape • The site shall be kept neat and tidy at all times. Equipment must be kept in designated areas and storing/stockpiling shall be kept orderly. • Mitigation of the visual impact by screening of prospecting pits or trenches with green shade cloth.		
			Impact 7: Emissions • Health and safety equipment is required for workers. • The wetting of the roads helps reduce dust generation during transporting of processing materials. • No amplified music should be allowed on site. • Existing tracks will be used as haul roads and will only be upgraded to facilitate haul trucks by applying dust suppression and/or hardening compound such as Macadamite. • On public roads the vehicles shall adhere to municipal and provincial traffic regulations including speed limits.		

- Vehicles used on site for the construction related activities shall be maintained and in a good working condition so as to reduce emissions.
- Engines shall be turned off when the vehicle is temporarily parked or stationery for long periods.
- Incremental clearing of ground cover should take place to minimise exposed surfaces.

Impact 8: Archaeological Resources

<u>The following recommendations are made:</u>

Mandatory avoidance of some areas with 50m buffer, avoidance (with 50m buffer) or archaeological excavation of others

The assigned heritage grade and the nature of mitigation go hand in hand as shown in table below (taken from HIA). Many sites are very ephemeral and/or obviously lack cultural materials. These sites are graded GPC and require no further work.

Grade	Mitigation	Purpose of mitigation
GPC	One	No apparent cultural significance, no mitigation required.
GPB	Small sample	The small sample provides a record of the site and its contents with the main record anticipated to be of the shellfish. This sampling also serves as a test excavation to determine whether further excavations might be required. This would be in the event that the initial sample produces an elevated density of cultural materials. Some sites were allocated slightly more time because the chances of encountering cultural materials seemed higher from the initial surface examination. Note that as a precautionary measure in some large clusters of scatters (that might represent single site complexes) where only certain waypoints have been suggested for mitigation, all waypoints have been assigned the same grade so that if significant subsurface deposits are found the whole site will be available for potential further investigation.
GPA	Excavation	Sites where many cultural materials were evident on the surface were assigned a grade of GPA. These are sites with a medium-high local cultural significance because there is clearly much scientific data to be

			gained through their excavation. At these sites a fairly large area should be sampled.		
IIIA	Avoidance and *in situ* protection	This grade was allocated to all finds related to the historic copper railway. The copper mining landscape is of very high local cultural significance and must not be disturbed by prospecting.			

Sampling of sites graded GPB will entail excavation of at least one square meter, and more where this becomes warranted (i.e. if many cultural materials are found).

More significant sites were graded GPA and will need a larger scale excavation that samples a wider area and gathers valuable scientific data. This work would have to be done under a permit issued to the consulting archaeologist by SAHRA. It is noted, however, that the intention is to try and avoid as many archaeological sites as possible, so mitigation as described here will only be required for those sites that cannot be avoided.

For avoidance, buffers of 30 m around sites are required by SAHRA. To effect this, buffers of 50 m around the waypoints have been provided to account for the area of the site plus a buffer of at least 30 m for all waypoints of GPB or higher grading.

Management measures are also required. This will entail the careful planning by the developer of the project layout, both the test pitting phase and the bulk sampling phase. Maps should be prepared showing all areas that will require disturbance. These should be examined by an archaeologist and submitted to SAHRA for the record. Any mitigation required will need to be decided upon and commissioned. Prospecting work may not commence in the relevant areas until SAHRA has approved of the disturbance plan (if no impacts are expected) or the mitigation report.

Impact 9: Potential impacts on graves

There are no pre-construction mitigation measures that can be applied. However, provision needs to be made for the immediate protection and reporting of any accidental finds of human remains to an archaeologist for evaluation and rescue as necessary. The SAHRA protocols at the time for dealing with human remains will need to be followed.

Impact 10: Potential impacts on cultural landscapes

The only mitigation measure suggested is to ensure that correct rehabilitation measures are applied. This measure has already been included into the project design.

			Impact 11: Potential impacts on paleontological resources 1. Loss of fossil bones from excavations in the marine Avontuur, Hondeklipbaai and Curlew Strand formations. • Prospecting personnel to be alert for rare fossil bones and follow "Fossil Finds Procedure". • Cease construction on discovery of fossil bones and protect fossils from further damage. • Contact appointed palaeontologist providing information and images. • Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for preservation, collection and record keeping. 2. Loss of fossil bones from excavations in the aeolian formations, included pedocretes and pan deposits. • Prospecting personnel to be alert for rare fossil bones and follow "Fossil Finds Procedure". • Cease construction on discovery of fossil bones and protect fossils from further damage. • Contact appointed palaeontologist providing information and images. • Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for preservation, collection and record keeping. 3. Loss of fossil shells from excavations in the Avontuur and Hondeklipbaai formations. • Prospecting personnel and ECO to be aware that a substantial temporary exposure of marine shelly beds may require sampling and recording. • In the event of a large exposure of shell beds, the appointed palaeontologist must be notified and provided with information and images. Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for sample collection and record keeping. • Selected exposed fossiliferous sections in earthworks recorded and sampled by appointed palaeontologist. 4. Loss of fossil shells from excavations in the marine Curlew Strand Formation raised beaches. • Prospecting personnel and ECO to be aware that a substantial temporary exposure of marine shelly beds may require sampling and recording. • In the event of a large exposure of shell beds, the appointed palaeontologist must be notified and provided with information and images.		

			Palaeontologist will assess information and establish suitable response, such as the importance of the find and recommendations for sample collection and record keeping. • Selected exposed fossiliferous sections in earthworks recorded and sampled by appointed palaeontologist. **Impact 12: Socio-economic** • Employment of local previously disadvantaged labour wherever possible, with provision of training (upskilling)		
Final Rehabilitation and removal of temporary infrastructure	**DECOMMISSIONING**	TOTAL EXTENT OF AREA REQUIRED FOR PROSPECTING Tailings storage Facility and processing will be located in historical pit. Total footprint from 30 Prospecting pits: 88m² X 30 = 2640m² (0.2640Ha) Total surface disturbance: 5 Trenches: 0.5Ha X 5 = 2.5Ha; 10 Trenches = 5Ha, depending on findings from pit sampling.	**Impact 1: Biophysical Environment** • Implementation of Final Rehabilitation, Decommissioning and Mine Closure Plan. • Pit development will be the same as for trench development (Bulk Sampling), but on a much smaller scale. There will only ever be three prospecting pits open at any given time, one in the process of rehabilitation, one that is operational and one in the process of development and it is anticipated that no more than 30 such pits will be developed. After results are logged the pit will be backfilled immediately for security and safety reasons before the project is moved to the next pit position. In case of sudden closure of the project there will only be one open pit to be dealt with as part of final decommissioning and rehabilitation. • The existing historical excavation is estimated at 50 000m³ at an average depth of 5 meters, which means that even if the maximum of 10 bulk samples is excavated only 10% of the excavation will be filled. Therefore, at final closure the floor of the excavation needs to be levelled and the sides sloped to create an even depression, or if prospecting advances to full scale mining then the excavation will remain for processing during mining activities. • The focus of topographic rehabilitation may not be obvious at the time of mine planning and must be addressed as the mine develops and the Closure Plan must be reviewed periodically for continued relevance in the light of changed prospecting path or long-term plans. • Regular inspections and audits will be used as management system to ensure compliance. • Compacted areas shall be scarified after use during decommissioning and rehabilitation. • Any stored topsoil shall be spread over the scarified surface. <u>Other mitigating with regard to residual environmental impact</u>	NEMA Section 2 Principles Environmental Authorisation	

			• Implementing screening as part of the cleaning activities before materials are moved from the mine. • The infrastructure area will be screened for petrochemical spills and cleaned and waste from the temporary storage facility will be removed and the area cleaned. • Any compacted movement areas will be screened for petrochemical spills and cleaned before it is ripped and levelled. • Redundant structures will be removed for use elsewhere or demolished and discarded. • Remove all power and water supply installations not to be retained by landowner in terms of section 44 of the MPRDA. • Final walk through of complete mining lease area to ensure no mining related waste and of re-usable infrastructure remain on site. As part of this phase training of personnel in the implementation of the Closure Plan will done and the implementation of the environmental awareness plan will be an ongoing process.		
			Impact 2: Socio-Economic Environment • Ongoing employment of local previously disadvantaged labour wherever possible, with provision of training (upskilling)		

15.7 Impact Management Outcomes

Table 17: Impact Management Outcomes

ACTIVITY (Whether listed or not listed).	**POTENTIAL IMPACT**	**ASPECTS AFFECTED**	**PHASE** In which impact is anticipated	**MITIGATION TYPE**	**STANDARD TO BE ACHIEVED**
Site access	Disturbance of fauna and flora	Biodiversity	Construction	Remedy through restriction and rehabilitation	Impacts minimised and mitigated. End use objectives achieved through rehabilitation according to the Closure Plan included in APPENDIX F: FINAL REHABILITATION, DECOMMISSIONING AND CLOSURE PLAN, page 403
	Soil compaction and erosion	Soil resource		Control through monitoring and management	
Site establishment, including waste generation and management	Visibility	Visual intrusion	Construction	Control through monitoring and management	Impacts minimised and mitigated. End use objectives achieved through rehabilitation according to the Closure Plan included in APPENDIX F: FINAL REHABILITATION, DECOMMISSIONING AND CLOSURE PLAN, page 403.
	Emissions (dust, noise & vehicles)	Noise & Air quality		Control through monitoring and management	
	Disturbance of fauna and flora	Biodiversity		Remedy through restriction and rehabilitation	
	Soil and sand contamination, soil compaction and disturbance	Soil resource		Remedy through restriction and rehabilitation & control through monitoring and management	
	Destruction or loss of Heritage & Paleontological resources	Cultural, Graves, Archaeology, Heritage and Palaeontology		Avoidance by relocation of activity if required Management via permit application for destruction of heritage resources, with potential for salvage	Impact avoided Impact mitigated
Removal of gravel, loading and hauling, processing, tailings waste generation and management	Change in landscape	Topography	Operation	Remedy through restriction and rehabilitation	Impacts minimised and mitigated. End use objectives achieved through rehabilitation according to the Closure Plan included in APPENDIX F: FINAL REHABILITATION, DECOMMISSIONING AND CLOSURE PLAN, page 403.
	Soil and ground water contamination, and waste management	Contamination & pollution		Control through monitoring and management	
	Visibility	Visual		Control through monitoring and management	
	Emissions (dust, noise & vehicles)	Noise & Air quality		Control through monitoring and management	

	Disturbance of fauna and flora	Biodiversity and salt pan		Remedy through restriction and rehabilitation	
	Soil erosion and compaction	Soil resource		Remedy through restriction and rehabilitation & control through monitoring and management. Management and control would include focus on recycling of water wherever possible.	
	Use of sea water for prospecting process and potable water for domestic use	Ground water resource			
	Destruction or loss of Heritage & Paleontological resources	Cultural, Graves, Archaeology, Heritage and Palaeontology		Avoidance by conducting a heritage and paleontological impact assessment, followed by control and management if necessary.	Impact mitigated or avoided
Removal of temporary infrastructure and site rehabilitation	Dust emissions (vehicle entrained dust)	Soil resource	Decommissioning	Control through monitoring and management	Impacts minimised and mitigated. End use objectives achieved through rehabilitation according to the Closure Plan included in APPENDIX F: FINAL REHABILITATION, DECOMMISSIONING AND CLOSURE PLAN, page 403.
	Soil erosion due to slow recovery of vegetation	Soil resource & biodiversity		Remedy through restriction and rehabilitation & control through monitoring and management	
	Change in topography	Topography			

15.8 Impact Management Actions

Table 18: Impact Management Actions

ACTIVITY Whether listed or not listed.	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Site access	Disturbance of fauna and flora	Remedy through restriction and rehabilitation Control through monitoring and management	Concurrently with site access activities Upon cessation of activity	Remain within the ambit of the Prospecting Right Programme and Environmental Authorisation
	Soil compaction and erosion			
Site establishment, including waste generation and management	Visibility	Control through monitoring and management		
	Emissions (dust, noise & vehicles)			
	Disturbance of fauna and flora	Remedy through restriction and rehabilitation		
	Soil and sand contamination, soil compaction and disturbance	Remedy through restriction and rehabilitation & control through monitoring and management		
	Destruction or loss of Heritage & Paleontological resources	Avoidance		
Removal of overburden, and mineral resource material, loading and hauling, waste generation ad management	Change in Topography	Remedy through restriction and rehabilitation	Concurrently with site access activities Upon cessation of activity	Remain within the ambit of the Prospecting Right Programme and Environmental Authorisation, and General Authorisation.
	Visibility	Control through monitoring and management		
	Emissions (dust, noise & vehicles)	Control through monitoring and management		
	Disturbance of fauna and flora	Remedy through restriction and rehabilitation		
	Soil and sand contamination, soil compaction and disturbance	Remedy through restriction and rehabilitation & control through monitoring and management		
	Use of sea water for prospecting process and potable water for domestic use			
	Destruction or loss of Heritage & Paleontological resources	Avoidance		

Removal of temporary infrastructure and site rehabilitation	Dust emissions (vehicle entrained dust)	Control through monitoring and management	Upon cessation of activity	Remain within the ambit of the Prospecting Right Programme and Environmental Authorisation
	Soil erosion due to slow recovery of vegetation	Remedy through restriction and rehabilitation & control through monitoring and management		
	Change in topography			

16 FINANCIAL PROVISION

16.1 Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation

As detailed in Section 15.5.1 above:

Objective 1 - To create a safe and healthy post-prospecting environment

- Safe excavations
  - Slope stability of remaining excavation
  - No potentially dangerous areas secured if required
- Limited residual environmental impact
  - Develop a landscape that reduces the requirement for long term monitoring and management
  - No surface and/or groundwater contamination
  - Waste management practices not creating or leaving legacies

Objective 2 - To create a stable, free draining post prospecting landform, which is compatible with the surrounding landscape

- Economically viable and sustainable land, as close as possible to its natural state.
  - Prepare area to promote natural re-establishment of vegetation that is self-sustaining, perpetual and provides a sustainable habitat for local fauna and successive flora species
  - Prevent long term changes in land use by implementing prompt rehabilitation and maintenance of disturbances when possible as part of annual rehabilitation plan.
- Stable, free draining post prospecting landform
  - Prevent alteration or diverting natural drainage lines and reduced natural runoff.
  - Prevent concentration of runoff, mixing of clean runoff with contaminated runoff and creation of large open water bodies.

Objective 3 – To provide optimal post-prospecting social opportunities

- Optimised benefits for the social environment
  - Positive and transparent relationships with stakeholders and maintaining communication channels, providing stakeholders including government authorities with relevant information as per legislative requirements.
  - Undertaking environmental management according to approved EMPr and Rehabilitation, Decommissioning and Closure Plan (**Appendix F, page 403**) and regular auditing of the environmental management system.
- Minimal negative aesthetic impact
  - Mitigate the nuisance effects of air emissions (dust), visual intrusion and the cumulative effect of an increase in the ambient noise levels
  - Prevent disturbance of heritage, archaeological and paleontological sites and implement mitigating measures according to the Heritage Impact Assessment and Paleontological Impact Assessment.

16.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties

The closure objectives are included in this Draft EIR and in the Rehabilitation, Decommissioning and Mine Closure Plan (**Appendix F, page 403**) which is being made available to all registered Interested and Affected Parties.

16.3 Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main prospecting activities, including the anticipated prospecting area at the time of closure

Refer to the Rehabilitation, Decommissioning and Mine Closure Plan, which includes the Environmental Risk Assessment in **Appendix F, page 403**.

16.4 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives

The closure objectives are to return the land disturbed by prospecting activities back to its original condition. The rehabilitation plan provides the detail on how this will be achieved as detailed in **Appendix F, page 403**.

16.5 Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline

Refer to Part A, Section 12, and Table 15of this report.

16.6 Confirm that the financial provision will be provided as determined

Refer to Part A, Section 12.3 of this report.

16.7 Mechanisms for Monitoring compliance with and performance assessment against the Environmental Management Programme and reporting

Table 19: Mechanisms for Monitoring Compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
All prospecting activities	All commitments contained in the EIA Report and accompanying EMPr.	Ensure commitments made within the approved EIR and EMPr are being adhered to.	Site Manager and EAP.	Annual Undertake and submit an environmental performance audit to DMR
Site access and site establishment	Visual inspection of soil erosion and/or compaction	All exposed areas, access roads and soil stockpiles must be monitored for erosion on a regular basis, specifically after rainfall events.	Site Manager and Independent EAP	Weekly, and after rain-fall events Weekly monitoring reports to be signed-off by the Site Manager Corrective action to be confirmed and signed-off by the Site Manager. Consolidated monthly monitoring reports (including confirmation of corrective action taken, with photographic evidence) to be submitted to the Site Manager.
Operational - Diamond Prospecting	Visual inspection of biodiversity impacts Visual inspection of waste and effluent management, access and haul roads, housekeeping and maintenance.	Visual inspection of prospecting activities and other possible secondary impacts Control and prevent the development of new access tracks. Repair and maintenance of access roads and boundary fence. Control and prevent growth of alien vegetation in cleared areas and on stockpiles. Standard waste management practices must be implemented to prevent contamination and littering. All spill incidents will be reported and corrective action taken in accordance with an established spill response procedure.	Site Manager & Contractor (or sub-contractors)	Daily Weekly monitoring reports to be signed-off by the Site Manager. Corrective action to be confirmed and signed-off by the Project Site Manager. Consolidated monthly monitoring reports (including confirmation of corrective action taken, with photographic evidence) to be submitted. Report incidents in terms of the relevant legislation, including the MPRDA, NWA and NEMA.
Closure & Rehabilitation	Revegetation; Stability; Soil erosion Alien invasive species	Inspection of all rehabilitated areas to assess whether soil erosion is occurring and to implement corrective action where required.	Site Manager	Bi-Annual A final audit report for site closure must be submitted to the DMR for approval.

16.8 Indicate the frequency of the submission of the performance assessment/ environmental audit report

An external environmental performance audit and the EIA & EMPr performance assessment shall be conducted annually interchangeably by an independent environmental assessment practitioner.

17 ENVIRONMENTAL AWARENESS PLAN

17.1 Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work

Environmental awareness and training includes:

- Awareness training for contractors and employees.
- Job specific training – training for personnel performing tasks which could cause potentially significant environmental impacts.
- Comprehensive training – on emergency response, spill management, etc.
- Specialised skills.
- Training verification and record keeping.

Before commencement of the prospecting activities all new employees and contractors who are involved with such activities should attend relevant induction and training. It is standard practice for employees and the employees of contractors that will be working on a new project or at a new site to attend an induction course where the nature and characteristics of the project and the site are explained.

The training course should include key information abstracted from the EMPr pertaining to the potential environmental impacts, the mitigation measures that will be applied, the monitoring activities that will be undertaken and the roles and responsibilities of contractors' and personnel.

The EMPr document will also be made available to attendees.

17.2 Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment

Environmental risks and how to manage them are dealt with in the induction course referred to in Section 17.1 above. Should an incident of environmental pollution or damage occur it will be analysed and appropriate prevention and/or mitigation measures developed. These measures will be added to the EMPr and conveyed to the relevant personnel.

All unplanned incidents with the potential to cause pollution or environmental degradation or conflict with local residents will be reported to the Mineral Resources Manager within 24 hours.

Hydrocarbon Spills: Hydrocarbon spills that are considered to be emergency incidents are large-scale spills (cover a surface area >1m²), resulting from situations such as: a leaking diesel bowser; an oil drum that is knocked over; and, large spillages from equipment.
Activities that are involved in the clean-up of such instances include:

- The containment of the spill;
- The removal of all contaminated material; and,
- The disposal (at a licensed hazardous disposal facility) or bioremediation (at a licensed facility) of this material.

Fire: There is the potential for fire to occur in the following locations of the sand prospecting site:

- Veld fires across vegetated areas; and
- Vehicles and equipment.

Veld fires: Any person who observes the fire must report it to the fire brigade immediately and then to their supervisor. If possible, additional personnel may be sent to contain the fire, but only if the lives of the personnel will not be endangered.

Vehicles and Equipment: Fire extinguishers will be available at the site where sand prospecting activities will take place and in the vehicles. All staff members will be trained in the use of fire-fighting equipment.

17.3 Specific information required by the Competent Authority

Not applicable at this stage.

18 UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I, **Pieter Badenhorst** herewith undertake that the information provided in the foregoing report is correct including reference to Specialist Reports (as attached), and to be read in conjunction with the Disclaimer provided in the beginning of the report. Noting that no comments or inputs were received from stakeholders and Interested and Affected Parties on the Draft Scoping Report.

P. Badenhorst.

Signature of the Environmental Assessment practitioner:

GroenbergEnviro (Pty) Ltd

Name of company:

21 September 2021

Date: